Ottar Bjerkeset

Anxiety and depression in the general population: Risk factors, intervention, and outcome The Nord-Trøndelag Health Study (HUNT)

Doctoral thesis
for the degree of doctor medicinae

Trondheim, September 2006

Norwegian University of Science and Technology
Department of neuroscience
HUNT Research Centre, Verdal and
Department of Psychiatry, Levanger Hospital, Levanger
Nord-Trøndelag Health Organization

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LIST OF PAPERS

1. Bjerkeset O, Nordahl HM, Mykletun A, Holmen J, Dahl AA. **Anxiety and depression following myocardial infarction; gender differences in a five year prospective study**. Journal of Psychosomatic Research 2005; 55(2): 153-161.

2. Bjerkeset O, Dahl AA , Stordal E, Dahl NH, Krüger MB, Linaker O. **Feasibility of psychiatric screening and intervention in the HUNT population study.** Social Psychiatry and Psychiatric Epidemiology, published online January 19th 2006.

3. Bjerkeset O, Mykletun A, Dahl AA, Linaker O. **Mortality in relation to self-reported mixed anxiety and depression symptoms – the HUNT population study.** Nordic Journal of Psychiatry, accepted for publication January 17th 2006.

4. Bjerkeset O, Nordahl HM, Larsson S, Dahl AA, Linaker O. **Four year stability of syndromal and sub-syndromal anxiety and depression symptoms in the general population: The HUNT study.** Psychological Medicine, submitted February 23rd 2006.

ABBREVIATIONS

ADI	Anxiety Depression Index (measure of mental distress in HUNT 1)
BMI	Body Mass Index (kg/m^2)
CI	Confidence interval
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4^{th} edition (current)
ESEMeD	European Study of the Epidemiology of Mental Disorders
ECA	Epidemiologic Catchment Area
GAD	Generalized Anxiety Disorder
HADS	Hospital Anxiety and Depression rating Scale
HADS-A	Anxiety subscale of HADS
HADS-D	Depression subscale of HADS
HADS-T	Total HADS score (mixed anxiety and depression)
HADS-T caseness	Total HADS score $\geq$ 19 points
HR	Hazard Ratio
HUNT 1	The first Nord-Trøndelag Health Study (1984-86)
HUNT 2	The second Nord-Trøndelag Health Study (1995-97)
ICD-10	International Classification of Diseases, 10^{th} edition (current)
IDANT	The Intervention study against Depression and Anxiety in Nord-Trøndelag
IDANT follow-up	Follow-up of a subsample (N=2,616) four years after HUNT 2 (2000)
MD	Major Depression
MDE	Major Depressive Episode
MI	Myocardial Infarction
NCS	National Co-morbidity Survey
OR	Odds Ratio
PHRG	Psychiatric High Risk Group (HADS-T score $\geq$ 25 in HUNT 2)
PPV	Positive Predictive Value
PRG	Psychiatric Risk Group (HADS-T score 19-24 in HUNT 2)
QoL	Quality of Life
RCT	Randomized Controlled Trial
REF	Reference Group (HADS-T score 0-18 in HUNT 2)
SES	Socioeconomic status
WHO	World Health Organisation

1. INTRODUCTION

The spectrum of anxiety and depression ranges from genetically determined, life-saving primitive response and behaviour (e.g. fight-flight response) via normal, yet strenuous, reactions to daily stress and life events to severe long standing disorders with considerable risk for fatal outcomes (e.g. suicide). These highly different manifestations of anxiety and depression make understanding, interpretation, and classification of symptoms particularly challenging for researchers, clinicians, and policy makers. It is, therefore, standards of assessment and classification are continuously being developed and debated. Current classification of mental disorders is based on a semi-structured interview (1). Self-report of anxiety and depression symptom severity does not serve a diagnostic purpose, but instead is a tool, which is commonly used in clinical and research settings for screening and evaluative purposes. However, risk factors, course, and outcome in anxiety and depression has previously, for the most part, been studied for diagnostic categories, and not for self-rated symptoms.

Though anxiety disorders and depression are highly prevalent in the general population (2;3), under-identification and under-treatment still prevails (4-6). As a result, the individual and societal burden of anxiety and depression is considerable and manifests itself through increased rates of sick leave, disability pension at a young age, and early death (7-9). Unfortunately, previous attempts to improve detection, treatment, and outcome of anxiety and depression have been less than successful (10;11).

In the Nord-Trøndelag Health Study (HUNT 2), a three-step intervention sub-study was carried out. This included, first, a mental health educational programme, which was followed by a population based screening for anxiety and depression, and then a psychiatric intervention programme. To our knowledge this combination of methods had not been attempted before. This population study gave the opportunity to pursue the following research aims in this dissertation:

1) Examine and discuss the feasibility, the response to, and the consequences of psychiatric screening and intervention in a general population study setting (Paper II).

2) Study self-reported anxiety and depression symptoms prospectively, both as outcome measures and as predictors for future symptom course and mortality (Papers I,III, and IV).

2. ANXIETY AND DEPRESSION: BACKGROUND

2.1 Clinical features

Symptoms of anxiety and depression can often be distinguished by their clinical expression. Anxiety is mostly associated with extensive worrying, the feeling of tension, hyper vigilance and fear of possible negative incidents (12), while depression usually presents itself as sadness or lowered mood, psychomotoric retardation, indifference regarding the present situation and the future, and anhedonia (13).

Both anxiety and depression symptoms are often subtyped into *psychological*, *somatic or functional,* and *social symptoms*. While *psychological symptoms* often differ in anxiety and depression, *functional symptoms* like sleep disturbance and lack of energy, and s*ocial symptoms* such as avoidance and passiveness, often overlap in these two conditions (12;13). Anxiety and depressive symptoms are not specific to each category; they often overlap as well as appear in other psychiatric disorders, and even in somatic illnesses. Insomnia, lack of energy or appetite, for example, can all occur in both depression and anxiety as well as in coronary heart disease or in cancer. While the gender difference in prevalence of anxiety and affective disorders are one of the most consistent findings in psychiatric epidemiology, it is still controversial as to how symptoms of anxiety and depression are affected by gender and age (12-18). In addition, symptom expression as well as symptom tolerability shows great inter-individual variance.

2.2 Underlying core dimensions of anxiety and depression

Due to the complexities of clinical and theoretical constructs, it has been difficult to agree on the core characteristics of anxiety and depression. In a primary care setting, Goldberg et al (19) identified highly correlated dimensions of anxiety and depression. Later, Goldberg proposed a dimensional model for common mental disorders, which included anxiety, depression, and somatisation (20). Similar models of common psychopathology have been developed by others over the last decade; this supports the idea that co-morbidity of anxiety and depression emerges from common, underlying core psychopathological processes (21;22).

After an extensive review of studies addressing symptoms of anxiety and depression in various populations and health care settings Clark and Watson (23) suggested a tripartite

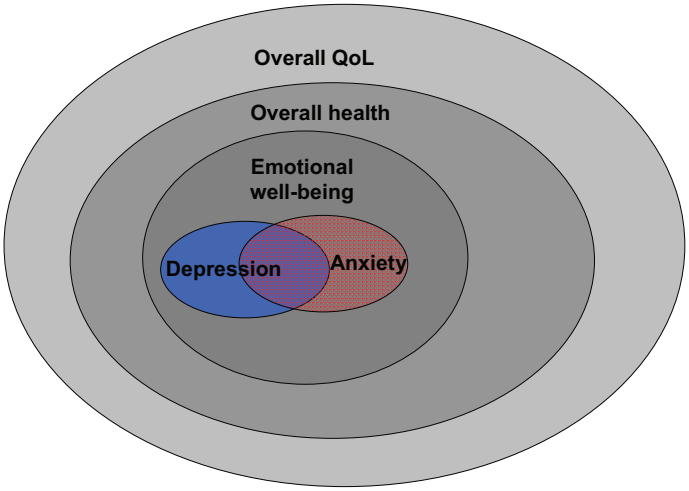
model. First, the model contains a common factor for anxiety and depression consisting of general distress or *negative affect* including both anxious and depressed mood, insomnia, and poor concentration. Second, a specific factor for anxiety consisting of *tension and anxious arousal* manifested as shortness of breath, dizziness or light-headedness, and dry mouth was described. Third, the depression factor was described as *anhedonia* and absence of positive affect, i.e. loss of interest and feeling that nothing is interesting or enjoyable.

Anhedonia had the most specific variance (58%) among depressive symptoms examined (24). With further progress in genetic and phenotypic research, Mineka, Watson, and Clark (25) were able to present an *integrative hierarchical model* after new testing of this model in 1998. Though quite similar to the original model, generalised anxiety and depression shared common genetic and phenotypic characteristics in this refined model; and within the group of anxiety disorders there was substantial heterogeneity concerning genetic and cognitive aspects. Consistent with observations in adults, the general ideas of the tripartite model were supported in a large multiethnic school sample of children and adolescents (26).

2.3 Assessment and classification of anxiety and depression

Measurements of health have been used for more than a hundred years to indicate health problems confronting society, to contribute to forming policy, and to monitor the effectiveness of treatment and health care (27). On an individual level, health measurement can range from the assessment of global health indicators to more narrow and specific instruments covering, for instance, the above described (sub)dimensions of anxiety and/or depression (Figure 1).

Figure 1. Domains and levels of health measurement



As a general distinction, anxiety and depression can be measured either by self-report of symptoms (subjectively) or by observer-rating (objectively, by the means of an interview or testing). However, these methods often serve different purposes, often defined as primarily diagnostic, prognostic, evaluative, or a combination of these (28).

2.3.1 The psychiatric interview: dichotomous approach

A semi-structured diagnostic interview is the gold standard for collecting systematic information about the diagnostic criteria for relevant mental disorders according to the current editions of the DSM or ICD-system (29;30). In general, diagnoses based on operational criteria is related to diagnostic thresholds based on number and duration of symptom or behavioural criteria, presence of functional impairment, and non-presence of exclusion criteria.

The introduction of the third edition of the DSM by the American Psychiatric Association (31) in 1980 represented a dramatic change towards more detailed and standardised classification of mental disorders. One of the main aims of this reform was to provide clinicians with a common language (32) that would be independent of etiological considerations; this, after decades of inconsistent and unreliable classifications. With the DSM-IV (1994) (29) a variety of new constructs of mood and anxiety disorders emerged (33-

35). Despite the high prevalence (36;37) and the unfavourable outcome in co-morbid anxiety and depression disorders compared to single diagnosis (38;39), the current classification systems do not allow for a mixed diagnosis, except for at a sub-clinical level and only in the group of adjustment disorders (30;40).

Examples of commonly used structured interviews are the Diagnostic Interview Schedule (DIS) (41), the Present State Examination (42), the Structured Clinical Interview for DSM-III (SCID) (43), the Composite International Diagnostic Interview (CIDI) (44), the Schedule for Clinical Assessment in Neuropsychiatry (SCAN) (45), and the MINI International Neuropsychiatric Interview (MINI) (46).

The theoretical constructs of DSM and ICD are based on the assumption that increasing severity and duration of self-rated symptoms in a person increase the probability for meeting the criteria for a disorder (47). Though this is often the case, the association between self-rated symptom severity and diagnostic categories has turned out to be weaker than expected (48). As a consequence, the authors recommend combining these methods before treatment is decided upon.

2.3.2 Self-rating of anxiety and depression: dichotomous or continuous approach

Self-rating often serves screening and evaluative purposes, and is widely used for both clinical purposes and research purposes. Though it is not a diagnostic tool according to the DSM and ICD, a dimensional symptom score from a rating scale with proven psychometric properties may be defined as probable case above a defined cut-off level on the scale (Figure 2). Relatively little is known concerning the prognostic validity of self-rating instruments.

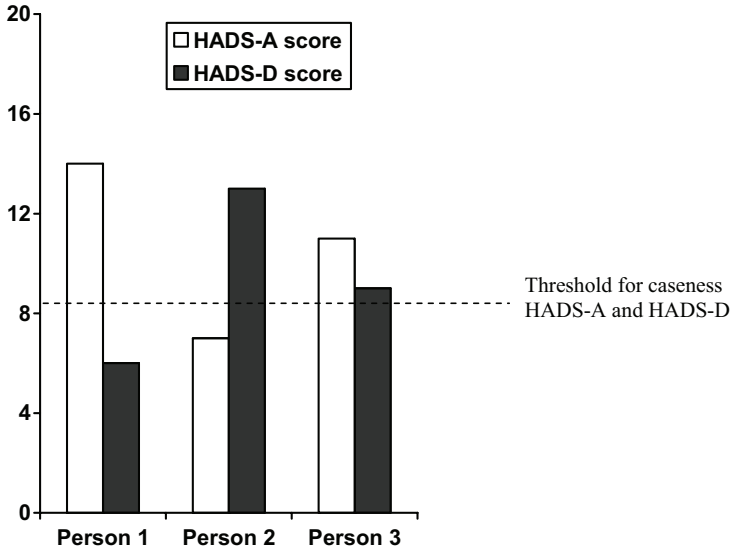


Figure 2: Assessment of anxiety and depression in HADS.

Continuous approach: All three persons above have a HADS-T score of 20 points, yet with different contributions from the anxiety and depression subscales.
Dichotomous approach: When using dimensional, separate cut-off values for anxiety and depression (8 points), the persons 1-3 get three different labels; anxiety case, depression case, and co-morbid case, respectively. If a syndromal cut-off value for mixed anxiety and depression (HADS-T $\geq$ 19 points) is used, all three subjects reach the defined caseness.
In a *continuous approach, the symptom level* for each subscale or total HADS-score is described using the actual symptom score (e.g the left example above; HADS-T = 21, HADS-A = 12, and HADS-D = 9).

Commonly used screening scales for anxiety and depression in health surveys are: The Beck Depression Inventory (BDI) (49), the Centre for Epidemiologic Studies Depression Scale (CES-D) (50), the General Health Questionnaire (GHQ) (51), Hopkins Symptom Check List (HSCL)(49), Spielberger State-Trait Anxiety Inventory (STAI) (50), and the Hospital Anxiety and Depression rating Scale (HADS) (51).

Some scales mainly meet the diagnostic criteria of the DSM- or ICD-system (52), yet most vary in their focus on the psychological, somatic, and social symptoms of anxiety and/or depression. While the depression subscale of the HADS (HADS-D) focuses mainly on psychological symptoms, the scales BDI, CES-D, and GHQ all contain vegetative and somatic symptoms such as insomnia, reduced appetite, and loss of energy. Differences in the scope and coverage of the instruments are of great importance when comparing results between surveys.

2.4 Prevalence and co-morbidity of anxiety and depression

Epidemiological population studies consistently find that women have a considerably higher prevalence of anxiety disorders compared to men. This is also the case for moderate and severe depression, though minor depressive symptoms show little gender variance (3;53-56). In contrast, several population studies, including HUNT 2, find that there are no or few qualitative or quantitative gender differences in self-reported depressive symptoms (14;17;57).

Anxiety disorders and affective disorders are common in the general population, yet prevalence estimates show great variation. While the 12-month prevalence of major depressive episode was 5.8% in the Epidemiologic Catchment Area Study (ECA) (56), it was 10.3% and in the National Co-morbidity Study (NCS) (55). The recent European Study of the Epidemiology of Mental Disorders (ESEMeD) (3) found that only 3.9% fulfilled the same criteria. The corresponding 12-month prevalence of any anxiety disorder showed the same pattern: 6.4% in ESEMeD, 12.7% in the ECA, and 17.2% in the NCS. Life-time prevalence for any anxiety disorder or any mood disorder has typically varied between 14% and 25% in previous studies (3;55;56;58), yet the NCS Replication study from 2005 (59) found 29% for anxiety disorders and 21% for mood disorders.

Though cultural and historical effects might have had some bearing on the results (60-63), the various methods of assessment (different psychiatric interviews) and the use of different versions of ICD or DSM probably account for most of the discrepancy between the three studies. Regier et al (64) pointed at these discrepancies and questioned the clinical significance and interpretation of the findings. As a consequence, Narrow et al (2) revised the prevalence estimates in 2002 from the ECA and NCS using data on clinical significance. This

resulted in a general reduction of the past-year prevalence rates in both surveys and reduced disparities between them.

Symptoms of anxiety and depression show great overlap (65), and this overlap increases with symptom severity (66). More than half of those diagnosed with MDE in the general population (37;67), in primary care settings (68), and in patient samples (66) have co-morbid anxiety disorder(s). The increasingly overlapping indications in psychopharmacological treatment further support that anxiety and depression are part of the same functional biological spectrum both at symptomatic and diagnostic levels (69;70); and neither genetic studies (71) nor neurobiological studies (72) have found clear evidence that generalised anxiety and depression should be separated. In accordance with this literature, anxiety and depression symptoms were highly inter-correlated in HUNT 2. Stordal et al (73) found that 5,827 (62%) out of the anxiety cases had "pure anxiety" (HADS-A $\geq$ 8 and HADS-D < 8) while 2,988 (45%) of the depression cases fulfilled the criteria of "pure depression" (HADS-D $\geq$ 8 and HADS-A < 8) in the total HUNT 2 population. The rest of the cases (38% and 55%, respectively) fulfilled the criteria for both conditions.

In conclusion, a *dimensional* distinction between anxiety and depression might, therefore, make more sense when studying anxiety and depression in a general population sample with modest psychiatric morbidity and great variation in symptom scores. In contrast, clinical samples and psychiatric risk groups in the general population are, by nature, characterised by mixed anxiety and depression (74) and could better be studied using a *syndromal* approach. For these reasons, the HADS-T score was used as inclusion criteria in the highly selected sample in the IDANT study (Papers II-IV). In the post-MI study (Paper I), which included a much larger general population sample, HADS-A and HADS-D were studied separately as outcomes. It is noteworthy that the original viewpoint of Zigmond and Snaith (75) was to always keep separate the HADS-A and HADS-D subscales.

2.5 Risk factors for anxiety and depression

2.5.1 General comments

Anxiety and depression symptoms may represent emotional responses to one or more stressors. Despite a close association, it has, so far, been difficult to establish biological causal connections between stress and mental disorders (76). Therefore, the literature on risk factors for anxiety and depression is largely based on variables that *determine the biological*

susceptibility to anxiety and depression (e.g. genetic factors, gender, age)*, mediators of stress* (e.g. sociodemographic situation, lifestyle and life events, and physical illness)*,* and *characteristics associated with stress coping* (e.g. education, gender, personality). In general, co-morbid anxiety and depression show associations with nearly all established sociodemographic and vulnerability factors, whereas pure depression and pure anxiety disorder can each be linked to only about half of the factors (77).

2.5.2 Genetic factors

Recently, comprehensive same-sex twin studies by Kendler, Hettema, and co-workers (71;78) have demonstrated that the underlying structure of genetic and environmental risk factors (e.g. family disruption, poor parental monitoring, or low SES) for depression and anxiety disorders show little difference between men and women. Within the internalizing disorders, the strongest genetic factor loaded on major depression and GAD in these studies. Apart from a possible midlife and late age gene action in females for depression, genetic determinants of anxiety and depression also appear relatively stable across the lifespan for both genders (79).

2.5.3 Sociodemographic factors

Though often hypothesised, studies have not been able to confirm whether gender differences in prevalence of anxiety and depression can be explained by the different distribution of sociodemographic factors (marital status, employment status, educational level, number of children, or social class) in women and men (80). The established gender differences might be better explained by the symptom pattern and symptom severity in depression. In their study of subtypes of depression in 1,920 primary care patients, Chen et al (81) demonstrated that depression characterised primarily by anhedonia (defined as a mild subtype) showed similar prevalence in both genders. In contrast, the risk for suicidal depression and severe depression was more than doubled in women compared to men. This is consistent with findings from the large DEPRES Study (Depression Research in European Society) covering representative population samples of six European countries (53).

Though anxiety and depression symptoms might differ qualitatively with age (82), the literature review by Jorm (15) found no consistent pattern for the prevalence of anxiety and depression at symptomatic or diagnostic levels in different age groups. In sum, the determinants of gender and age differences in common mental disorders are still far from being understood (80). Among the sociodemographic factors that clearly increase the risk for

common mental disorders are low educational level (83), financial deprivation, unemployment, and low socioeconomic status (84-87).

2.5.4 Psychosocial and coping factors

Concerning the psychosocial determinants for anxiety and depression, previous symptoms of the same conditions have proven to be the strongest risk factors for the onset of new episodes (88-90). In a lifespan perspective, negative childhood events, poor social support, and a vulnerable personality style represent potent determinants for the onset of depressive disorders (90;91). Since fearful-anxious, dependent, and self-critical personality traits are more common in women than in men, they are likely to explain some of the excess psychiatric morbidity in women (90;92-95).

Stressful life events have a substantial causal relationship with the first onset of major depression in both genders (96), though the coping strategies and symptom course often differ between the genders (18;97-99). In the DEPRES Study of 78,000 individuals from six different European countries, Angst et al (53) showed that depressed men often cope by increasing their physical activity and alcohol consumption and women through emotional release and religion. In general, women reported that depression influenced their quality of sleep and general health, and men reported feeling the influence of depression more so in their ability to work.

2.5.5 Lifestyle, biological markers, and physical illness

While physical inactivity (100) and daily smoking (101) have proven to predict common mental disorders, longitudinal studies of excessive alcohol consumption and the onset of anxiety and depression have been inconclusive (102;103). Social and lifestyle determinants of depression and anxiety seem to be the same or similar across cultural settings (84;90). The adverse effects of obesity (most often defined as BMI $\geq$ 30) on mental health have, so far, been demonstrated only for depression (104). However, the mechanisms have yet to be fully elucidated, though both behavioural (e.g. social isolation, feeling of shame) and pathophysiological aspects (inflammation, metabolic processes) probably play important roles (105-107).

Though biological markers like serum cholesterol level (108-111) and blood pressure (112-115) have been topics of various studies, their role as risk factors for anxiety and depression

remain unclear. A wide range of physical illnesses, however, increase the risk for anxiety (116-118) and depression (119;120).

2.5.6 Myocardial infarction as a risk factor for anxiety and depression

There has been much research done on psychiatric outcome after cardiac events and cardiac procedures. Clinical studies have repeatedly reported 17% to 22% prevalence of major depression during the first year after MI, regularly higher in women than in men (89;121-125). Post-MI depression is associated with poor medical outcome and increased mortality (125;126). Female gender and history of pre-MI depression(s) are well-established risk factors for post-MI depression in the first 12 months, yet the impact of pre-MI demographic, psychosocial, and lifestyle characteristics on post-MI depression are still disputed (89;122;125;127).

Although co-morbid anxiety and depression is common, surprisingly few studies have investigated the prevalence post-MI anxiety (128). Recently, a five-country comparison study found high symptomatic anxiety scores the first days after MI to be a general phenomenon across cultures (129). As found for post-MI depression, prevalence of anxiety symptoms were consistently higher in women than men in all countries studied (130). Lane et al (131) demonstrated that 40% still had elevated anxiety and depression scores 12 months post-MI according to the STAI and BDI, respectively, and symptom overlap was common. Nevertheless, the prognostic value of post-MI anxiety symptoms have not been well documented compared to depression (128). Given the high prevalence and the chronic course of CHD, anxiety, and depression it is also remarkable that few studies have done follow-up studies lasting past 12 months. In addition, most previous studies have been performed in clinical populations, and, therefore, little is known concerning the psychiatric long-term outcome after MI in the general population.

2.6 Course of anxiety and depression

The natural course of depression can vary from a single episode, via recurrent episodes, to a chronic course. The main risk factors for a recurrent or chronic course are a high genetic risk for depression and many previous depressive episodes (88). The ECA study (132) and the NEMESIS study (133) both found that median duration of MDE was 3 months in the general population and that about 20% were still depressed after two years. Mean duration was 6 months in both genders. In a primary care study of 1,111 patients, Vourilehto et al (68)

demonstrated that mild to moderate recurrent MDD was the most prevalent depressive disorder (66%). In this study, 59% of the depressed subjects had co-morbid Axis I disorders. Two studies of psychiatric patients by Kennedy, Abbot, and Paykel (134;135) showed that illness severity at baseline was the strongest predictor for a recurrent or chronic course, and, despite recent advantages in psychological and medical treatment, that the long-term outcome of depression had not changed in the last 20 years.

Though conclusions regarding gender differences in the course of major depression are inconsistent (136), several studies have found a prolonged and more severe course in women and discuss whether this can be partially ascribed to sex differences in employment status, education, and marital status (35;137). The fact that severe depression, which is associated with female gender seems to emerge about a decade earlier in life than the more gender neutral anhedonia type (81) might also help explain gender differences in course and outcome. The Zurich Cohort Study (54) confirmed that women continued to report a greater number of symptoms than men over time, yet there were no gender differences in subjective impairment at work.

GAD is a common mental disorder that typically has an early age of onset, a chronic course, and a high degree of co-morbidity with other anxiety and mood disorders (138). GAD is often temporally primary, especially in relation to mood disorders, and is associated with an increased risk for the subsequent onset and severity of secondary disorders (139). The NCS Replication by Kessler and co-workers in 2005 (59) confirmed this temporal relationship between anxiety and depression showing a median age of onset of only 11 years for anxiety disorders and 30 years for mood disorders.

Though the impairment of GAD is more severe than previously assumed, there is little doubt that the course of co-morbid anxiety and depression is more chronic and the outcome poorer than for anxiety and depression alone (35;38;39;140-143). There is more supportive evidence in studies with 5 to 15 years of observation, and they seem to apply to most outcome variables studied: duration of mental symptoms, social and work impairment, health service utilisation, total mortality, and suicide risk.

2.7 Determinants for poor outcome and excess mortality in anxiety and depression

The individual and societal burden of anxiety and depression is considerable and manifests through increased rates of sick leave, disability pension at a young age, and early death (7-9). The negative impact of depression and anxiety on the workforce is increasing world wide, and projections from the Global Burden of Disease Study (9) have predicted that unipolar depression will become the leading cause of disability among adults in the Western countries by 2020.

Current etiological models have several limitations, yet determinants of chronic depression do not seem to differ qualitatively from those who predict acute depression (144); and these determinants seem independent of age (145;146). It is suggested that a high genetic risk, increased levels of childhood adversity, chronic environmental stress, and increased individual stress reactivity predict chronic rather than single episodes of depression (88;144). In a study of 117 psychiatric outpatients with MDE by Szadoczky et al (147), anxious personality features, lack of social support, and low educational level were associated with non-remission at the end of a 2-year follow-up period. In agreement with other studies (81;148), initial symptom severity was the strongest predictor for a chronic course. In anxiety disorders, avoidance coping has shown to be a major predictor for overall improvement. Yet, the mechanism that often leads to a poor outcome in anxiety disorders is that anxiety often acts as a precursor for subsequent depression and substance abuse (139;149). The Nottingham Study of Neurotic disorders found that the above mentioned determinants for depression also predicted poor outcome after five (39) and twelve years (143) in subjects with co-morbid anxiety and affective disorder.

Excess mortality has, for the most part, been studied separately in anxiety (150;151) and depression (152) using diagnostic interviews for classification purposes. Though most previous studies are poorly controlled and have inconsistent findings, the majority of well-designed studies agree that MD increases the risk for early death across various health care settings (152-156). A combination of mediating factors related to lifestyle, behaviour, and biological changes occurring in anxiety and depression may be responsible for this association (152;154).

In the relatively few reports from the general population, different definitions of anxiety disorders have often been used, and their associations with mortality has been inconsistent

(151;157). However, Allgulander's study in Stockholm County, Sweden (158) that included 3,302 inpatients with the "pure" anxiety neurosis showed a strong association with excess mortality. Nevertheless, most studies suffered from limited information on co-morbid physical disorders and depression. A study by Murphy et al (159) confirmed excess mortality in co-morbid depression and GAD, though early death was associated with the affective disorder and not with co-existent GAD. In previous studies linking anxiety and depression with increased total mortality, adjusted ORs typically vary between 1.3 and 2.0.

In sum, the mechanisms and mediating factors by which depression, and to some extent anxiety, increase the risk for early death are: increased risk for coronary heart disease, smoking, excess alcohol intake, male gender, and suicide or non-natural deaths (150;152;160). There seems to be a dose–response relationship between anxiety and depression severity level and total mortality both when using self-rating of symptoms (153) and diagnostic categories (140;154;161). However, the dose-response relationship theory cannot be absolutely backed up as different studies often use one cut-off for case-level depression and case-levels vary across studies. It is still unclear whether self-report or clinical interview is the more precise predictor for excess mortality in anxiety and depression.

Given the high prevalence, the risk for a chronic or recurrent course and poor outcomes, and the available treatment regimes, anxiety and depression should be suited for ethical scientific research and intervention (162).

2.7 Mental health help-seeking, screening, and intervention

Despite increasing knowledge about risk factors, course, and treatment of anxiety and depression under-identification and under-treatment still prevails in both the general population (6) and in primary care settings (4;5). The most common reasons are lack of help-seeking by patients and relatives (163;164), poor detection in primary care (4;165), and inadequate treatment for those detected (166;167).

Stigma and the general attitude towards help-seeking and mental problems still create major barriers to help-seeking and problematic personal interaction between patient and GP (168;169). The nature of anxiety and depression, characterized by introversion, social withdrawal, and often somatic presentation of symptoms, further contributes to low detection rates.

The results from educational interventions designed to improve detection, treatment, and outcome of mental disorders in primary care have long been inconsistent (10;170;171). Some RCTs, mostly educational programmes, have demonstrated improved detection rates and outcome measures in primary care settings (172-174). Nevertheless, the majority of recent studies yielded negative results (175-177). Several studies address the general problem of recruiting those in need for psychiatric treatment (178) and physicians in a primary care setting (179). In the extensive review by Hodges et al (10), the authors concluded that future studies to a larger extent need to address the GPs' needs and premises, choice of outcome measures, and attitudinal issues. The literature review by Gilbody et al (180) demonstrated that routine administration of screening instruments for anxiety and depression in non-mental health settings had little impact on detection, management, and outcome of anxiety and depression in 12 RCT studies. Though two relatively small studies (181;182) showed that selective feedback for only high scorers increased the rate of detection, it did not improve management and outcome of depression. A combination of population strategies and intervention towards individuals at high risk could improve these results.

2.8 Suicide intervention

Almost one million lives are lost every year through suicide worldwide, and several developed countries have implemented mental health treatment programmes and suicide intervention plans (183). Still, the prevalence of suicidal thoughts, plans, gestures, or attempts did not change in the United States from 1990 to 2003 (184).

The optimistic findings from the Gotland Study (185) were later questioned, mainly because the total number of suicides was limited and the suicide reduction was transient and only evident in females (186). Recently, Bruce et al (187) studied 598 individuals diagnosed with depression in primary care settings, and demonstrated that suicidal ideation declined faster in the intervention group compared to controls regardless of depression severity.

However, in 1995 the impact of the Gotland study was still strong. Therefore, a mental health advisory group suggested an educational programme in primary care settings in the months before HUNT 2 combined with an intervention towards individuals with the highest levels of anxiety and depression in HUNT 2. The main goal was to reduce the rate of suicides in Nord-Trøndelag County.

3. OBJECTIVES

The general aims of this dissertation are:

1) to examine and discuss the feasibility, response, and consequences of psychiatric screening and intervention in a general population study setting, and

2) to study self-reported anxiety and depression symptoms in a prospective design, both as outcome measures and as predictors for future symptom course and mortality

The specific aims of this dissertation, papers I-IV:

1. Clinical studies report a 4-5 fold increased prevalence of MD throughout the first 12 months post-MI, regularly higher in women than in men. The following questions were explored in our five year prospective population study (Paper I):
    - Is the risk for anxiety (HADS-A $\geq$ 8) and depression (HADS-D $\geq$ 8) increased throughout the first five years post-MI?
    - Are there gender differences in the risk for post-MI anxiety and depression in a five year perspective?
    - What is the impact of the actual MI on anxiety and depression compared to the impact of pre-MI risk factors?

2. To investigate feasibility, response among participants and GPs, and consequences of a mental health screening and intervention study (IDANT) carried out in a population study setting (Paper II).

3. To study the association between self-reported mixed depression and anxiety symptom severity level (HADS-T) and 4.5 year mortality in a subsample (N=2,624) in HUNT 2 (Paper III).

4. To study the four year stability of mean HADS-T, HADS-A, and HADS-D scores, and to observe the individual changes across three HADS-T severity levels in the general population. Three groups (N=1,326) scoring 0-19 points, 19-24 points, or 25 or above on the HADS-T, were selected in HUNT 2 and invited to a follow-up.

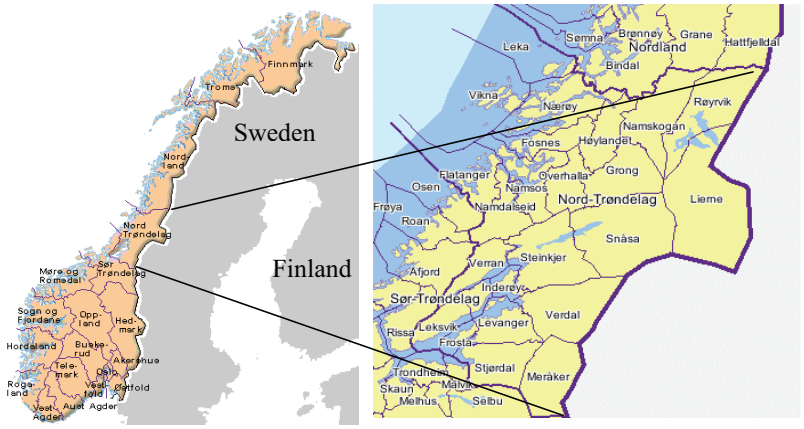
THIS STUDY

4. MATERIAL AND METHODS

4.1 The Nord-Trøndelag County, Norway

Nord-Trøndelag County is located in the central part of Norway and is divided into 24 municipalities (Figure 3). The county is about 3% of the total Norwegian population and increased from approximately 127,000 in 1984 to 127,500 in 1995. The population is considered ethnically homogenous with 97 % of the population being of Caucasian origin, and net migration is only 0.3% per year. Nord-Trøndelag has a geographical, demographical, and occupational structure fairly representative of the whole of Norway. Yet, the county has no large city and the educational level and the income level are slightly lower than the average for Norway. The socioeconomic inequalities in mortality in Nord-Trøndelag are at the national level (188)

Figure 3. Study area, the Nord-Trøndelag County of Norway (www.norge.no).



4.2 The Nord-Trøndelag Health Studies (HUNT)

4.2.1 General description of HUNT

HUNT is a population based general health survey and has been carried out in two waves so far, HUNT 1 in 1984-86 (133) and HUNT 2 in 1995-97 (13). HUNT 3 is in the planning stage and will take place from 2006 to 2008. The general purposes, methods, and questionnaires are described at the HUNT website (http://www.hunt.ntnu.no/index_nyforside.php?side=english).

All inhabitants aged 20 or above were invited to the surveys; among those who were eligible, 74,977 (88.1%) and 66,140 (71.2%) attended HUNT 1 and HUNT 2, respectively. Attendance varied considerably with age, and was generally better in women in both surveys (Table 1).

Table 1. Attendance in HUNT 1 (1984-86) and HUNT 2 (1995-97)

Age	HUNT 1			HUNT 2		
	Eligible (n)	Participated (n)	%	Eligible (n)	Participated (n)	%
20-29	14,330	10,994	76.7	18,025	8,828	49.0
30-39	17,769	15,943	89.7	16,896	11,550	68.3
40-49	13,244	12,253	92.5	17,636	13,569	77.0
50-59	11,877	10,852	91.4	13,785	11,205	81.2
60-69	13,294	12,466	93.8	10,611	9,089	85.6
70-79	9,837	8,769	89.2	10,401	8,310	79.9
80-89	4,162	3,081	74.0	4,851	3,202	66.0
90+	587	319	54.3	731	387	52.9
Total	85,100	74,977	88.1	92,936	66,140	71.2

The same two-step procedure was used in both surveys: Questionnaire 1 (Q1, Appendix 1.1 and 2.1), which included the HADS in HUNT 2, was mailed out with a personal invitation and was to be filled in at home and brought to the physical examination a few days later. At the examination the attendees also received Questionnaire 2 (Q2, Appendix 1.2 and 2.2), which was filled in at home and then returned by mail.

While HUNT 1 was primarily designed to study arterial hypertension, coronary heart disease, lung diseases, diabetes, and quality of life, HUNT 2 included mental health and a wide range of other topics. Sociodemographic variables, lifestyle issues, health care utilisation, somatic

symptoms and diagnosis, alcohol intake, and functional impairment were also extensively covered. All variables except for age, gender, address, marital status, and results of somatic examination and blood tests were collected by self-report.

About three to six weeks after the examination, every participant received a personal letter with results from the health examination, and if they had pathological clinical or biochemical values they were asked to visit their GP. The GPs received copies of the same letter.

4.2.2 Mental health education, screening, and intervention in HUNT 2 (IDANT)

In 1994, a mental health advisory group of four psychiatrists was formed to plan, carry out, and organize mental health research in HUNT 2: Alv A Dahl, Nils Håvard Dahl, Marit Bjartveit Krüger, and Eystein Stordal. The advisory group recommended to the Steering Committee that HADS be included in HUNT 2. The strategy was to combine a mass mental health educational programme (Appendix 4.4) prior to HUNT 2 with the Intervention study against Depression and Anxiety in Nord-Trøndelag **(**IDANT), which was to be embedded in HUNT 2.

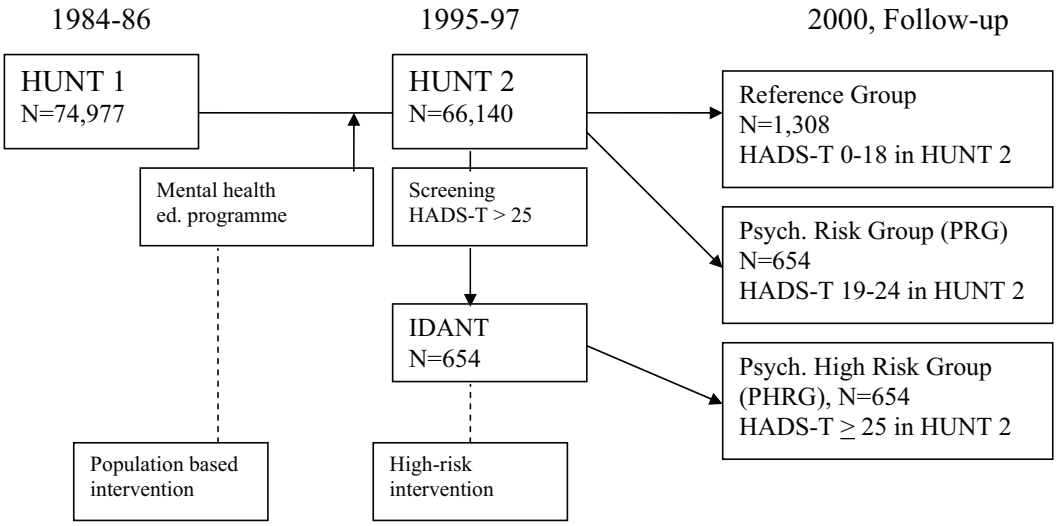
The advisory group developed the Structured Psychiatric Interview for General Practice (SPIFA), which is a diagnostic instrument for mental disorders for primary care setting. A validation of SPIFA against SCID I (43) was performed by psychiatrists in general practice patients prior to HUNT 2. The kappa for major depression was .73 and for anxiety disorders it was .69. How the SPIFA is used was part of the educational programme that was offered as two-day seminars to all 90 GPs and all psychiatric nurses in the 24 municipalities a few months before HUNT 2 reached their communities. The aim was to improve and update the diagnostic and treatment skills for common mental disorders (29) in primary care settings, and in particular to prevent suicides (189). Treatment guidelines for common mental disorders and suicidal behaviour were based on updated literature reviews. Three of the members in the advisory group (NHD, MBK, and ES) held these educational programmes.

In the IDANT, the Steering Committee suggested an intervention study aimed at individuals with the assumed highest prevalence of mental disorders and highest suicide risk in HUNT 2. The advisory board, therefore, chose to include the subgroup that had the highest total score on HADS-T in HUNT 2. It was expected that the GPs in the County could take on about 650 participants in the IDANT study, therefore the cut-off was set at HADS-total score ≥25 (99th

percentile) after a pilot testing of the first 2500 individuals in HUNT 2. This value is considerably higher than the conventional cut-off for co-morbid anxiety and depression (HADS-T > 19 points). The group was defined as the psychiatric high risk group (PHRG). In the PHRG (n = 662), two did not give informed consent to follow-up and six moved shortly after HUNT 2, leaving 654 individuals eligible for IDANT (Figure 4). The advisory board then suggested a randomisation to intervention in the PHRG, but the HUNT Board of Directors found randomisation to be unethical due to the expected increased risk for suicide. Instead, they suggested the same procedure as used in the somatic screening and intervention, and as a result all individuals in the PHRG received a written notification concerning their very high level of anxiety/depression and a strong request to see their GP (Appendix 4.4). Then, the GPs were supposed to fill in and return a baseline form (Appendix 3.1) with clinical background information on the individuals in the PHRG.

For several reasons, the IDANT study showed poor attendance both among participants and GPs. Therefore, a follow-up study was conducted four years later. Due to the lack of a defined control group in the IDANT, a random sample of 654 individuals (28%) was drawn from among the 2,334 who had HADS-T scores between 19 and 24 points (95th to 98th percentile) and constituted the “psychiatric risk group” (PRG). In addition, a random sample of 1,308 (2.2%) among the 58,498 individuals scoring 18 or less (under the 95th percentile) on the HADS-T were selected and defined as the “reference group”. The participants in the reference group and the PRG did not receive any notification about their HADS-T score after HUNT 2. Of the 2,616 subjects in this cohort, 2,502 (95%) were still alive at the time of follow-up. They were invited by mail (Appendix 4.5) and asked to fill in a questionnaire that included the most relevant variables from Q 1 and Q2 in HUNT 2, which included the HADS (Appendix 3.2). In addition, a random sample of 300 subjects from the PHRG was invited to a clinical follow-up interview a few days after they had filled in the questionnaire. If the interview revealed untreated or inadequately treated mental disorders, and the participant gave consent, the results from the interview and therapy suggestions were sent to the person’s GP (Appendix 4.5).

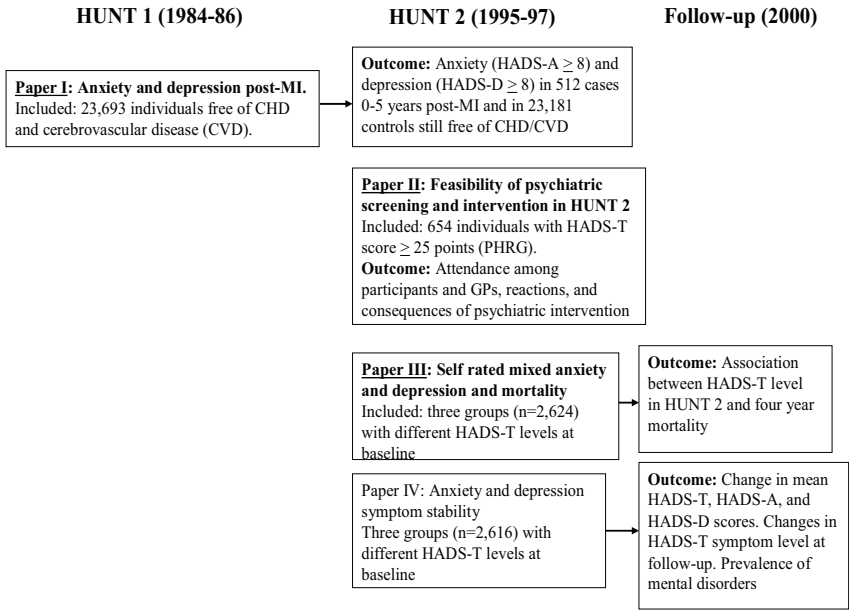
Figure 4. Design: HUNT 1, HUNT 2, IDANT, and the follow-up study.



4.2.3 Sampling and study designs

While the sample studied in Paper I was drawn from the total HUNT 1 and HUNT 2 populations, Papers II-IV studied feasibility and outcome in the IDANT study and the four year follow-up study after HUNT 2 (Figure 5).

Figure 5. Sampling procedures, Papers I-IV.



4.3 Measurements and variables

General note: if not otherwise specified below, variables were the same in HUNT 1 and HUNT 2.

4.3.1 The Hospital Anxiety and Depression rating Scale - HADS (All papers)

HADS was only available in HUNT 2. The instrument was originally developed by Zigmond and Snaith in 1983 (51) to identify depression and anxiety in medical patients. Functional/somatic symptoms of depression and anxiety that could be related to somatic diseases, such as dizziness, headaches, insomnia, anergia, or fatigue were, therefore, deliberately excluded. The two subscales consist of seven items for anxiety (HADS-A) and seven for depression (HADS-D), each scored from 0 (symptom not present) to 3 (symptom maximally present) on a Likert scale. The HADS-A contains items mainly concerned with restlessness and worry, as in generalised anxiety disorder, plus one item on panic attacks. HADS-D focuses mainly on the reduced pleasure response aspect (anhedonia) of depression,

as well as psychomotor retardation and depressed mood. HADS does not address symptoms of severe psychopathology, the language is easily understood, and the general acceptability of HADS is good across study settings (190). Zigmond and Snaith did not recommend summation of the sub-scale scores into a total HADS score (51), and argued that the separate anxiety and depressive subscales were valid measures of severity of different mental disorders.

At the time when HADS was selected for HUNT 2, the psychometric properties had mostly been studies in relatively small samples, and factor structure reported in these studies differed from one (common mental distress) to four factors (190). Though international experiences from about 200 studies were positive, the review by Hermann-Lingen in 1997 was restricted to medical patient settings and had several methodological limitations. In 2002, Bjelland et al (191) reviewed about 750 papers to examine the validity of the HADS in various health care settings. They found that most factor analyses supported a two-factor solution in good accordance with the HADS-A and HADS-D subscales. The correlations between the two subscales varied from .40 to .74 (mean .56), and the mean Cronbach's alpha for HADS-A and HADS-D were .83 and .82, respectively. The best balance between sensitivity (0.80) and specificity (0.80) was achieved when defining caseness at a cut-off of 8 points or above on both subscales. Correlations between HADS and the most commonly used self-rating instruments are, in general, high (at average between .60 and .70) (191), and the total HADS-score (HADS-T) tends to have slightly higher correlations than the two subscales. For example, the HADS-T correlated .71, .73, and .75 with the STAI-T (anxiety), the BDI (depression), and the GHQ-12 (anxiety and depression).

Though there was good agreement concerning the internal consistency and two-factor solution of HADS across different settings, the results regarding the case-finder abilities were more inconsistent. First, in the three studies from primary care settings, the optimal cut-off values varied from 3 to 9 points on HADS-A and 6 to 8 points on HADS-D (192-194). Second, only one population-based study had included a structured diagnostic interview and could be included in this review (195). Finally, a study of medical patients and psychiatric patient samples by Spinhoven et al (196) found good sensitivity, yet considerably lower specificity and PPVs than reported in most other studies. Spinhoven et al (196) recommended to use the total HADS score (HADS-T) to screen for any psychiatric disorder in samples with a high base-rate of psychiatric disorders, rather than using the HADS subscales to discriminate

between anxiety and depression. In contrast, Hamer et al (197) demonstrated good case-finder performance of the HADS in psychiatric in-patients who had been referred to a deliberate self-harm team. However, only the ability of HADS-D to detect major depression and dysthymia was tested in this study. Recently, a Swedish primary care study (52) compared HADS-A and HADS-D scores with two self-rating scales meeting diagnostic criteria for GAD and MDE, respectively, and confirmed that optimal cut-off for both HADS subscales was 8 or above.

The characteristics and performance of self-report instruments and diagnostic tests, by and large, depend on sample characteristics (e.g. different base-rate of the condition of interest) and the external validity criterion used (e.g. DSM-IV or ICD-10). The studies of psychiatric patients (196;198) were, along with the community study (195), the only papers in the review that had validated HADS against the ICD diagnostic system instead of the DSM. It is unclear what impact this methodological difference had on the result. The literature review showed good agreement regarding the recommended HADS cut-off across the various studies; and the few discrepancies that were found (193;194) could be explained by dissimilar cultural settings. Based on the literature, a caseness of depression and anxiety was defined by a score of ≥ 8 on each subscale, and co-morbid anxiety and depression at HADS-T ≥ 19 points. HADS-A and HADS-D scores were also examined as a continuous measure in Paper I.

In sum, HADS is a brief self-rating scale (14 items) suitable for screening purposes. It covers central psychological dimensions of both anxiety and depression, and it was designed to minimize the risk of identifying depression and anxiety due to symptoms of somatic illnesses. These were the main reasons for choosing this instrument in a general health study, the HUNT 2.

4.3.2 The Anxiety Depression Index – ADI (Paper I)

HADS was only available in HUNT 2. But four questions concerning anxiety and depression symptoms that addressed issues of nervousness, calmness, mood, and vitality were included in both HUNT 1 and HUNT 2 (Appendix A 1.2 and A 2.2).

Since these four questions could not differentiate sufficiently between anxiety and depression, a compound index (ADI, Anxiety and Depression Index) based on these four variables was validated against HADS in the total HUNT 2 population. Cut-off was set at the 88th percentile

in the total population sample in HUNT in order to quantitatively match the HADS cut-off. This provided an acceptable indicator as to whether psychiatric caseness was present in HUNT 1 (Sensitivity 0.51; specificity =0.93; Cohen`s kappa = 0.55). ADI, therefore, constituted our baseline measure of anxiety and depression in HUNT 1, and was used to adjust for mental distress level at baseline in cases and controls in Paper I.

4.3.3 Sociodemographic variables (All papers)

Information concerning *age*, *place of residence*, and *marital status* were obtained from the National Population Registry; all other variables were self-reported in Q1 and Q2. Participants that were not registered as married and did not report having a cohabitant or live-in partner were labelled as *living alone*. *Educational level* was divided into three subgroups: low (elementary school, 7-10 years), middle (secondary school, middle school, and senior high school), and high (four or more years at a college or university). In the analyses, the highest level (university level) was compared to low and middle level education. Persons who reported that they had a current job, and did not receive any kind of financial social services or pension were classified as *employed.* Since most employees receive retirement pension from the age of 67 years in Norway, the prevalence of *disability pension* was only examined in those 66 years of age and younger.

4.3.4 Lifestyle characteristics (All papers)

Increased alcohol intake was defined according to frequency of intake in the last month in HUNT I (Paper I) and according to yearly intake of pure alcohol in HUNT 2. In Paper II, the cut-off was at the 97th percentile ($\geq$ 660 cl in HUNT 2), and in Paper III, it was at the 95th percentile ($\geq$ 548 cl). In retrospect, these cut-off values were probably too high because of the relatively high prevalence of alcohol abuse in the Norwegian population (58) and the relatively small samples in the IDANT study. In Paper IV, cut-off was, therefore, set at the 75th percentile ($\geq$ 210 cl). In HUNT 1, those who reported using leisure time for *physical exercise* once or more often a week were defined as exercisers (frequency only). In HUNT 2, the dimension of intensity was taken into consideration; participants who reported three hours or more of moderate leisure time physical activity and/or one hour or more of hard physical activity (sweating/out of breath) weekly in the last year were labelled as physically active.

4.3.5 Clinical measurements (Paper I)

Obesity was defined as a Body Mass Index (BMI - weight in kg/height in m2) ≥ 30, and represents a commonly used cut-off (104;199). The possible influences of arterial hypertension at baseline on anxiety and depression post-MI were tested in separate models for *diastolic* (> 90 mmHg) and *systolic hypertension* (> 160 mmHg). 2,283 participants (9.6%) who were taking antihypertensive medication in HUNT 1 were excluded in these analyses. Specially trained nurses measured blood pressure at the beginning of the physical examination, using a Dinamap 845XT (Criticon) based on oscillometry.

4.3.6 Clinical characteristics (All papers)

The presence of ≥ 1 of the following conditions was defined as *chronic physical illness*: self-report of diagnosis of asthma, myocardial infarction, angina pectoris, stroke, diabetes, or cancer. A follow-up study after HUNT 1 showed that self-report of diabetes showed concordance with the medical files of the general practitioners in more than 95% of the cases (200). Participants with *chronic pain* were those who had reported thath a doctor had diagnosed rheumatism/degenerative joint disease, musculoskeletal pain, and/or headache lasting for more than one year. To assess *lifetime psychiatric help-seeking* in HUNT 2 (Papers III and IV), the participants were asked, “Have you ever had mental disorders for which you sought help?” *Lifetime major depressive episode* (MDE) in HUNT 2 (Papers III and IV) was defined as probable in cases self-reporting three or more out of five listed DSM-IV criteria phrased as, “During your life, have there ever been periods of 2 consecutive weeks or more when you (yes/no): 1) Felt depressed, sad, and down? (obligatory criterion); 2) Had problems with your appetite or ate too little? 3) Were troubled by loss of energy or lack of spare energy? 4) Really reproached yourself and felt worthless? 5) Had problems in concentrating or difficulty in making decisions?”

4.3.7 Instruments used in the IDANT study and the follow-up study

Attitude Toward Psychiatry – ATP (Paper II)

The attitude toward psychiatry and willingness to take on psychiatric examination and treatment varies among GPs (168); and this would probably affect their attitudes towards the IDANT. Therefore, the 30 item Likert-type Attitudes Toward Psychiatry Scale (ATP-30) was filled in by the GPs in the county prior to HUNT 2. The ATP-30 was originally developed to measure medical students' attitudes toward psychiatry (201-203). The items of the ATP-30

address attitudes regarding psychotherapy, psychiatric treatment in general, and the scientific basis of psychiatry. A total score of 90 points indicates a neutral attitude towards psychiatry, whereas higher scores indicate a more positive attitude.

The Mini International Neuropsychiatric Interview, MINI (Paper IV)

The Norwegian version of the MINI (46;204) version 5.0 was applied for the diagnoses of DSM-IV Axis I disorders in the 152 interviews in the follow-up study. The MINI covers 23 current and lifetime axis I disorders, it has been translated into many languages, and has been used in many multi-centre studies.

MINI has shown good concordance with current psychiatric disorders in the SCID-I interview for most mild and moderate psychopathology (e.g. 0.84 for major depressive episode and between 0.64 and 0.76 for most anxiety disorders and alcohol abuse), but poor concordance for current psychotic disorder (0.53), drug abuse (0.43), and social phobia (0.51). Kappa values for inter-rater reliability were all above 0.75, and 16 out of 23 values were above 0.90. For test-retest reliability kappa values were somewhat lower, still 14 out of 23 values were above 0.75.(205). The MINI has skipping rules if obligatory criteria are not met. Dimensional criteria scores for various disorders, therefore, cannot be established with the MINI. The rating of each criterion on the MINI is present or absent, and the number of positive criteria is summarized as to conclude if a disorder is present or not.

The IOWA personality disorder screen (IPDS, Paper IV)

The IPDS (206) was developed in order to offer a brief and sensitive personality disorder screen for both research and clinical settings. It was used as a supplement to the MINI in the follow-up study. Validation in a non-psychotic psychiatric patient sample yielded a sensitivity of 92% and specificity of 79%.

4.4 Data management

The HUNT 1 and HUNT 2 databases are extensive, containing several hundred self-reported variables and results from clinical tests from more than 60,000 participants. Data quality control was performed by SHUS and HUNT Research Centre. Storage and distribution of data files to researchers was done according to the regulations from the Data Inspectorate, Norway. The 11-digit person number of each participant was replaced by a reference number unique

for every research project in HUNT, in order to provide anonymity and avoid linkage of data files between different projects.

In the statistical analysis, missing data on self-reported variables were generally excluded, assuming that the individual did not know what to answer. Yet, in some variables where the person was assumed to know what to answer, the missing value was coded as a negative answer (e.g. not answering the question, "Have you ever had a myocardial infarction?"). Missing data on HADS were substituted if five or six items were completed on HADS-D or HADS-A by scores based on substitutions with the sum of completed items multiplied with 7/5 or 7/6, respectively. In the total HUNT 2 population, 61,494 (93.0 %) individuals met this criterion.

4.4.1 Statistical analysis

All statistical analyses were done by using SPSS (Statistical Package for Social Sciences) versions 11 and 12. Statistical significance was set at $p < .05$ and two-sided tests were used where applicable.

4.4.1.2 Descriptive statistics and univariate analysis

Chi-square statistics were used to examine differences between group frequencies (All Papers), whereas Fisher's exact test was used in Paper II due to few observations.
Univariate analyses of variance (UNIANOVA) were used in order to analyse differences between group means and estimation of confidence intervals (Papers I, II, and IV).
Paired-sample T-tests were used to examine mean HADS symptom scores in three study groups in HUNT 2 and at follow-up after four years (Paper IV). Cohen's d (effect size) was used to estimate the effect size of symptom change for each group.
Sensitivity, specificity, and PPV of the HADS-T for detecting mental disorders with the MINI as gold standard were calculated using standard two by two tables.

4.4.1.3 Multivariate analysis

The advantage of multivariate models is that they give the opportunity to control for variables which potentially confound the association of interest. In general, these covariates were organised thematically in blocks: demographic characteristics, lifestyle factors, and clinical characteristics. Each block was entered separately into the model using forced entry; the last step of the analysis was adjusted for all variables.

Binary logistic regression analysis was utilised to estimate the odds ratio (OR) for anxiety and depression post-MI compared to controls without CHD, as well as for interaction tests (Paper I). To assess time trends in the risk for post-MI anxiety and depression, time since MI was entered as a continuous variable (0-5 years) to the logistic regression model. Logistic regression was also used to predict non-response at follow-up in the IDANT study (Paper IV) using forced entry for the independent variables included in the model.
A hierarchical linear regression model was used to compare the impact of the first MI with impact of pre-MI characteristics on long term anxiety and depression (Paper I). Due to important gender differences both in CHD and in coping strategies in general, all multivariate analyses were performed stratified in terms of gender. The same technique was used for interaction tests to examine whether protective factors and risk factors were specific to post-MI for anxiety and depression, or if they have validity in the general population. Linear regression models require normal distribution of the outcome variable (HADS). HADS did not satisfy these conditions and were ln transformed before the analyses.
For survival analyses, Cox`s proportional hazards regression model (207) was used to obtain the hazard ratios (HR) for mortality in the two psychiatric risk groups compared to the reference group (Paper II). This is a robust mathematical model used to analyse data where survival time is available. To assess a possible trend in the mortality risk with increasing symptom severity, the HADS-T score was entered into a separate Cox regression model as a continuous variable. Cox regression analyses were also carried out to test for possible biological interactions of age, gender, smoking habits, and physical illness with HADS-T score in the prediction of mortality. In these analyses, HADS-T score was entered as a continuous variable and tested with each of the other factors separately.

4.4.2 Linkage with Population Registries

The Death Registry, Statistics Norway, records the date and cause of all deaths in Norway according to the WHO standards for classification (30). After obtaining approval from the National Data Inspectorate, this information was merged by Statistics Norway with data files of the participants included in the studies (Paper III).

4.4.3 Ethics

The Norwegian Data Inspectorate and the Regional Committee for Ethics in Medical Research approved the protocols for HUNT 1, HUNT 2, and for the follow-up study. Each

participant in HUNT 2 was asked to sign a document of personal consent, which stated that his or her data can be used for medical research (Appendix 4.2 and 4.3). Only participants who gave informed consent in HUNT 2 were contacted in the follow-up study.
Participants were also given the opportunity to withdraw the information they had provided and/or their informed consent at any time. Specific ethical issues concerning the notification of possible mental health problems and invitation of a psychiatric high risk group to an intervention study (IDANT) will be further addressed in the discussion of results.

5. RESULTS

5.1 Review of Paper I

Anxiety and depression following myocardial infarction; gender differences in a five year prospective study. Bjerkeset O, Nordahl HM, Mykletun A, Holmen J, Dahl AA. Journal of Psychosomatic Research 2005; 55(2): 153-161.

Background and aims: To examine the impact of the first myocardial infarction (MI) and the relative influence of pre-existing confounding factors on anxiety and depression in the following five years.

Methods: Gender-stratified prospective study of 23,693 participants 35-79 years of age, who were free of angina pectoris, MI, and cerebrovascular diseases in HUNT 1 (1984-86). Outcome measure was the Hospital Anxiety and Depression rating Scale (HADS) in HUNT 2 (1995-97).

Results: 512 subjects (2.2%) experienced their first MI in the last five years before attending HUNT 2 (mean time 2.6 years). Among these, women showed an increased risk for both anxiety (adj. OR 2.47, p=.018) and depression (adj. OR 2.45, p=.020) in the first two years post-MI compared to the reference group; this was followed by a significant reduction of these symptoms after the two-year mark. Trend tests confirmed this risk reduction over time in women. In contrast, the risk for depression, but not anxiety, was increased after two years post-MI in men (adj. OR 1.61, p=.003). Many of the baseline risk factors for anxiety and depression in HUNT 2 had stronger impact than the MI per se, and these risk factors were the same in the MI group and in the reference group. Anxiety and depression caseness in HUNT 1 was by far the strongest predictor for anxiety and depression in HUNT 2 in both genders. Daily smoking and obesity (BMI $\geq$ 30) at baseline predicted depression in both genders, while excess alcohol intake increased the risk for depression in men and anxiety in women at follow-up. Completed high school or university level education and employment protected both women and men from anxiety and depression in HUNT 2. Weekly exercise reduced the risk for depression in both genders.

Conclusion: There is considerable risk for anxiety and depression post-MI, yet the symptom course might be gender-specific and could require different clinical approaches in men and women. General risk factors for anxiety and depression were the same in cases and controls.

5.2 Review of Paper II

Feasibility of psychiatric screening and intervention in the HUNT population study.
Bjerkeset O, Dahl AA , Stordal E, Dahl NH, Krüger MB, Linaker O.
Social Psychiatry and Psychiatric Epidemiology, published online January 19th 2006.

Background and aims: To investigate feasibility, response, and consequences of mental health screening and intervention in a population study setting.
Methods: In the Intervention study against Depression and Anxiety in Nord-Trøndelag (IDANT), all GPs and psychiatric nurses were invited to a psychiatric educational programme prior to HUNT 2 (1995-97). All participants scoring 25 points or above (99th percentile, n = 654) on the Hospital Anxiety and Depression rating Scale (HADS) in HUNT 2 were defined as the Psychiatric High Risk Group (PHRG) and received a written notification with a request to see their GP and to participate in the IDANT.
Results: In total, 422 (64%) baseline forms could be retrieved in the IDANT. Only 177 of the forms (27%) were returned by the GPs, the rest had to be collected by the GPs' secretary (13 forms, 2%) or doctors from the two psychiatric clinics in the County (232 forms, 35%).The last 232 forms (36%) were not possible to retrieve because essential information was missing in the patients' records (20%) or because the GP refused to cooperate (16%). And in the collected baseline forms several variables had high rates of missing values.
Three out of four participants in the PHRG were already recognised by their GPs as patients with mental disorders prior to the IDANT. Despite few negative reactions to the notification letter (4 %) and to the invitation to IDANT (14%), only half of the subjects in the IG accepted the invitation to the study. The Attitude Towards Psychiatry questionnaire (ATP-30) confirmed a generally positive view of psychiatry and psychiatric treatment among the GPs in the county (mean score 107 points, SD 17.8). For 64% of the respondents in the PHRG, the GPs started new treatment, revised ongoing treatment, or referred the participant to the psychiatric outpatient clinic as a consequence of the IDANT.
Conclusions: Although attitude towards psychiatry among GPs and participants was generally positive, the response to the IDANT study was inadequate. An extremely high cut-off score, as was used in the IDANT study (25 points), offers the possibility to re-evaluate diagnosis and ongoing psychiatric treatment rather than detect new cases.

5.3 Review of Paper III

Mortality in relation to self-reported mixed anxiety and depression symptoms – the HUNT population study. Bjerkeset O, Mykletun A, Dahl AA, Linaker O.
Nordic Journal of Psychiatry, accepted for publication January 17th 2006.

Background and aims: Though there is a great overlap between anxiety and depression, excess mortality has mostly been studied for diagnostic categories of each condition separately. Our aim was to study the association between self-reported mixed anxiety and depression symptom level and mortality in the general population.
Methods: In the HUNT 2 population study, 2,624 individuals with different symptom levels on the total Hospital Anxiety and Depression rating Scale (HADS-T) were divided into three groups: 0-19 points (reference group), 19-24 points (Psychiatric Risk Group, PRG), and 25 points or above (Psychiatric High Risk Group, PHRG).
Results: 114 deaths (4.3%) occurred during 4.5 years of observation. Of these, all seven suicides (6%) were predicted by the conventional HADS-T cut-off (≥19 points) at baseline. Only the PHRG had increased total mortality risk after adjustment for all relevant confounding factors (Hazard Ratio 1.59, p=.043), yet trend tests supported a dose-response relationship between continuously increasing HADS-T score and increasing total mortality across the three groups (p for trend = .02). Excess mortality was similar to estimates from mortality studies of diagnostic categories of anxiety and depression. The relevance of the confounding factors established in the literature was, except for high alcohol consumption, confirmed by our study.
Conclusion: Our sample is limited and the findings therefore tentative, yet there was a positive correlation between HADS-T symptom level and total mortality risk in a 4.5 year perspective. As shown in previous studies, excess mortality in the anxious and depressed was confounded by male gender, somatic diseases and daily smoking. Conclusions regarding the association between symptom level and suicide risk cannot be made. It remains unclear which is the more precise predictor for early death, self-reported symptoms or clinical interview obtained mental disorder(s).

5.4 Review of Paper IV

Four year stability of syndromal and sub-syndromal anxiety and depression symptoms in the general population: The HUNT study.

Bjerkeset O, Nordahl HM, Larsson S, Dahl AA, Linaker O.
Psychological Medicine, submitted February 23rd 2006.

Background and aims: Both syndromal and sub-syndromal symptoms of anxiety and depression are associated with residual symptoms and a recurrent or chronic course. Although the percentage of persons at each symptom level seems to be rather constant over time, individual symptom fluctuation between levels has been considerable. Our aim was to study stability and change in self-rated anxiety and depression symptom levels in a large general population sample.
Methods: Three groups (N=2,616) with total score on the Hospital Anxiety and Depression rating scale (HADS-T) less than 19 points (N=1,308), 19 to 24 points (N=654), and 25 or above (N=654) in HUNT 2 were selected in HUNT 2 and followed up after four years. In addition, a random sample (N=152) of those at the highest symptom level at baseline was evaluated with the Mini International Neuropsychiatric Interview (MINI) at follow-up.
Results: At follow-up, 1,326 individuals (53.0%) participated and had valid HADS scores. Unfavourable sociodemographic characteristics and lifestyle factors, and the prevalence of life-time mental health problems, were highly associated with increasing HADS-T levels in HUNT 2. Self-rated mixed anxiety and depression symptoms followed similar longitudinal patterns as described for diagnostic levels found previously. From the lowest symptom level at baseline, 22% had reached HADS-T caseness level (19 points) or above at follow-up. HADS-T caseness at baseline predicted a chronic or recurrent symptom course in 74%, and HADS-T $\geq$ 25 at baseline predicted current mental disorder(s) in 72% at follow-up four years later.
Conclusion: HADS-T caseness (> 19 points) is a reliable predictor for high, long-term symptom stability in the general population, and indicates need for further psychiatric assessment and follow-up. Psychiatric morbidity is shared by many persons in the general population, and it is therefore more population initiatives and self-help strategies might be in order.

6. GENERAL DISCUSSION

In this dissertation, descriptive and analytical epidemiological methods as well as clinical methods were used in prospective studies of anxiety and depression in different samples from HUNT. The observed associations in our studies may have also been influenced by alternative factors that require further discussion. Sections 6.1.1-6.1.4 will address the methodological challenges within the HUNT study (internal validity): the role of chance, limitations in design, selection bias, information bias, and confounding factors. In section 6.1.5 we will discuss the implications for generalising the results to other populations and settings (external validity).

6.1 Methodological considerations

6.1.1 The role of chance

A general assumption in epidemiological studies is that we can draw conclusions for the total population based on the evaluation of a sample of that population. Since sample size is the major determinant of the degree to which chance affects the findings in a study (208), some findings from Papers III and IV (the IDANT study) must be considered tentative. This especially applies to the study of rare conditions and events (e.g. suicide) as their prevalence often shows great random variation in different sub samples from a total population. Among hundreds of variables available in HUNT, we only included exposure variables known or assumed to be causally related to the outcome of interest. Together with adjusted multivariate analysis this procedure reduces the likelihood of reporting significant associations by pure chance.

6.1.2 Study designs

Linkage between data sets from HUNT 1 (1984-86), HUNT 2 (1995-97), and the follow-up survey (2000) coupled with register data offered unique possibilities for prospective research in many fields. At the same time, several common limitations should be taken into consideration.

The long time lag between the HUNT 1 and HUNT 2 (Paper I) gave little opportunity to adjust for potentially important life events in the follow-up period that might have influenced the outcomes of interest. If these events were not randomly distributed between cases and controls, which is likely, it could lead to under- or overestimation of the influence of the

baseline exposure variables on anxiety and depression in HUNT. Though a high rate of loss to follow-up could be expected when the studies are 10 years apart, 31,283 (84.1%) of those eligible for both HUNT 1 and HUNT 2 in this particular age group attended both studies.

An advantage of this design, however, was the opportunity to adjust for important confounding factors at baseline (Papers I and III), which has long been neglected in psychiatric epidemiology. The accessibility of a reference group from the same study population makes estimation of effect size of the outcome more reliable than in most clinical studies.

The HADS was only available in HUNT 2, and, therefore, the four-item ADI (described in *4.3.2)* was used as a proxy for the HADS in HUNT I (Paper I). Though we found the psychometric properties of the ADI adequate for adjustment for mental distress at baseline and definition of caseness, it does not discriminate sufficiently between anxiety and depression, and as such, we cannot directly compare the anxiety and depression level in HUNT 1 and HUNT 2.

The IDANT study was designed by clinicians in order to identify and help those with the assumed highest suicide risk in the population sample (HADS-T score > 99th percentile). This is a noble approach, yet from an epidemiological point of view subpopulations at the very end of the distribution on a symptom scale yield little information about the widespread mental health problems of the general population (209). It is also given that the individuals above the 99th percentile are bound to experience symptom reduction at follow-up (Paper IV) due to regression towards the mean (RTM); this makes the interpretation of change in the HADS symptom score difficult. Even if a RCT had been allowed in IDANT, a more frequent outcome than suicide would have been necessary to prove efficacy (e.g. referral rates to psychiatric specialist service, help-seeking in primary care, or perhaps prevalence of sick-leave due to common mental disorders).

The variable length of delay between the HADS screening in HUNT 2 and further assessment at the GPs' offices (3-11 weeks) in IDANT brings about a questionable association between inclusion criteria (HADS-T score) and the GPs' findings (Paper II).

6.1.3 Selection bias in HUNT 1 and HUNT 2

When the association between the two factors to be examined is different in the participants and the non-participants, the selection of participants has resulted in a systematic error, a selection bias (210).

While HUNT 1 showed a high overall attendance rate (88.1%), the rate was lower, though still acceptable, in HUNT 2 (71.2%). However, participation in HUNT was not evenly distributed in the population. The younger and older age groups in both genders, and men in all age groups, were under-represented in both studies (figure 6).

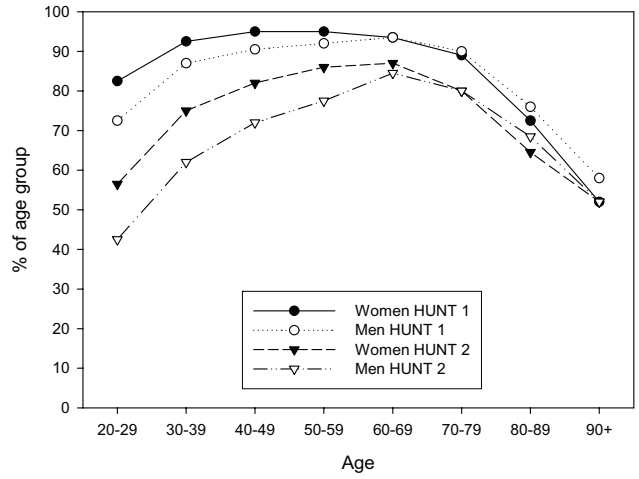


Figure 6: Participation rates in both genders in different age groups in HUNT 1 and HUNT 2.

A telephone survey among 685 randomly selected non-responders after HUNT 2 showed that the age adjusted prevalence of chronic somatic diseases and the use of cardiovascular and lung medication was the same as in the participants (211). Non-participants were primarily men in the younger age groups who were too busy to participate or studied or worked outside the county and elderly individuals of both genders with poor health (Table 2).

Table 2. The non-responder study. Reasons for not attending HUNT 2 in 326 (47.6%) out of 685 randomly selected non-responders in HUNT 2.

	20-44 years		**45-69 years**		**≥70 years**		**Total**	
Reasons for non-participation	n	(%)	n	(%)	n	(%)	n	(%)
Follow-up by physician/hospital	11	(5.8)	10	(13.7)	8	(28.6)	29	(10.0)
Long waiting at screening site	8	(4.2)	4	(5.5)	0	(0.0)	12	(4.1)
Busy at work	42	(22.1)	18	(24.7)	2	(7.1)	62	(21.3)
Immobilised by disease	16	(8.4)	6	(8.2)	6	(21.4)	28	(9.6)
Moved, or long time absent	59	(31.1)	10	(13.7)	6	(21.4)	75	(25.8)
Forgot/no reason/other	36	(18.9)	21	(28.8)	3	(10.7)	60	(20.6)
Unnecessary/unwilling	18	(9.5)	4	(5.5)	3	(10.7)	25	(8.6)
Total	190	(100.0)	73	(100.0)	28	(99.9)	291	(100.0)

In general, the proportion of missing data increased in older age in HUNT. The rate of valid HADS-T scores in participants aged 69 or younger was 97% in both genders in HUNT 2. Yet, this rate was significantly lower (78.3%, $p<.001$) in those aged 70 and above; and elderly men had a higher response rate on HADS-T compared to women (81.8 % and 75.6%, respectively, $p<.001$).

The literature shows that those with mental problems and mental disorders are under-represented in population studies (212-214). Participants in HUNT 1 who did not attend HUNT 2 (Paper I) had less education and higher ADI scores. They also had significantly more unfavourable sociodemographic characteristics and health behaviours as well as poorer somatic health compared to those who attended both surveys (215).

In sum, population surveys (including HUNT 2 and the papers in this dissertation) generally underestimate the prevalence, severity, and consequences of mental illness. Due to sampling in HUNT (only those ≥ 20 years) and low participation in the elderly (Figure 6), information concerning the onset of anxiety and depression in early adulthood and the consequences of the same disorders in citizens above 70 years is limited in this study. For the same reasons, data reported in those between 40 and 70 years yield better validity in our studies.

6.1.4 Selection bias in the IDANT sub-study in HUNT 2

The main focus on physical health issues in HUNT might have increased the participation among those with stigma against mental health problems (216) and those unaware of their mental health problems (e.g. psychosomatic problems) (5;217). The fact that the IDANT follow-up study four years after HUNT 2 was presented as a mental health study and yielded considerably lower response rates than HUNT 2 supports this assumption.

The skewed sampling towards high HADS-T scorers (PRG and PHRG) compared to controls in IDANT combined with a low participation at follow-up certainly made selection bias an important consideration for the interpretation of the results in Papers II-IV. In general, highly selected groups (PHRG) often show less variance in their characteristics compared to a general population sample (reference group), and are, therefore, less vulnerable to low participation rates. Because of this, we suggest that results regarding participants in PRG and PHRG might be generalised more easily than for the reference group (Papers II-IV). This is in agreement with the PART study by Lundberg et al (213), which found that study participants and non-participants with mental disorders in the general population shared clinical and sociodemographic characteristics.

However, the under representation of people with mental disorders in population surveys (212) confine the possibilities for individual risk strategies (Paper III), and particularly suicide prevention. Only 29 (52%) of the 56 inhabitants of Nord-Trøndelag who committed suicide in the first five years after HUNT 2 took part in the study.

6.1.5 Information bias

Information bias (recall and observer bias) can be defined as a flaw in measuring exposures or outcome data that results in different quality (accuracy) of information between comparison groups (218).

In HUNT, the risk for recall bias was reduced or removed because the same information was self-reported in both cases and controls prior to the onset of interest (Papers I and III). In Papers II and IV, however, the fact that participants, GPs, and interviewers knew that all participants, being in the PHRG, had scored very high HADS-T scores in HUNT 2 might have led to overestimation of mental health symptoms and related problems. Though one of the purposes of a structured interview is to minimize information bias, recall bias in

participants and observer bias in the interviewers could also have led to artificially high rates of mental disorders in MINI in Paper IV. Enns et al (219) found that age, educational level, depressive subtype, high neuroticism, and low extraversion predicted higher self-rated scores relative to observer ratings. These variables also demonstrated greater ability to explain discrepancies between self-ratings and observer ratings of psychological symptoms of depression, such as anhedonia, compared to somatic/functional symptoms of depression. Psychiatrists see anxiety and depression as being more distinct than patients report (220). This taken into consideration, supports the combination of these two methods to better assess the severity and need for treatment.

A fundamental issue in psychiatry is the validity of a diagnosis. For functional mental disorders there are no trait- or state diagnostic markers, as are frequently found in somatic medicine. Spitzer (1), therefore, laid down certain requirements for valid psychiatric diagnoses in the absence of specific tests for diagnostic validity, which he called the LEAD standard (obviously hinting at the lack of gold standard for functional mental disorders). The LEAD acronym was derived from Longitudinal observation made by clinical Experts who have All relevant Data for making a Diagnosis. In clinical settings, these requirements are often met. However, individuals examined in most psychiatric epidemiological investigation are seen only once for one to three hours by an interviewer who usually has no clinical expertise in psychiatry. And as such, diagnostic research in psychiatric epidemiology is rather far from the LEAD standard of validity.

It has been criticised that HUNT is based on self-report of physical illnesses. However, the agreement between self-report and medical records has proven to be substantial (kappa 0.73-0.80) in studies of cardiovascular diseases, hypertension, angina pectoris, myocardial infarction, cancer, and diabetes. Lower agreement was found for diseases with less established diagnostic criteria (e.g. lower back disorder, claudication, and arthrosis) (221-223). However, self-report of physical health variables is often sensitive to the level of anxiety or depression. While anxiety might cause a stronger awareness, sensitivity, and worry about somatic symptoms, the dominating pessimistic cognitions in the depressed could have resulted in an artificially strong association between somatic health problems and mental symptoms, especially in the PRG and PHRG (224;225).

6.1.5.1 Assessment and categorisation of self-reported anxiety and depression

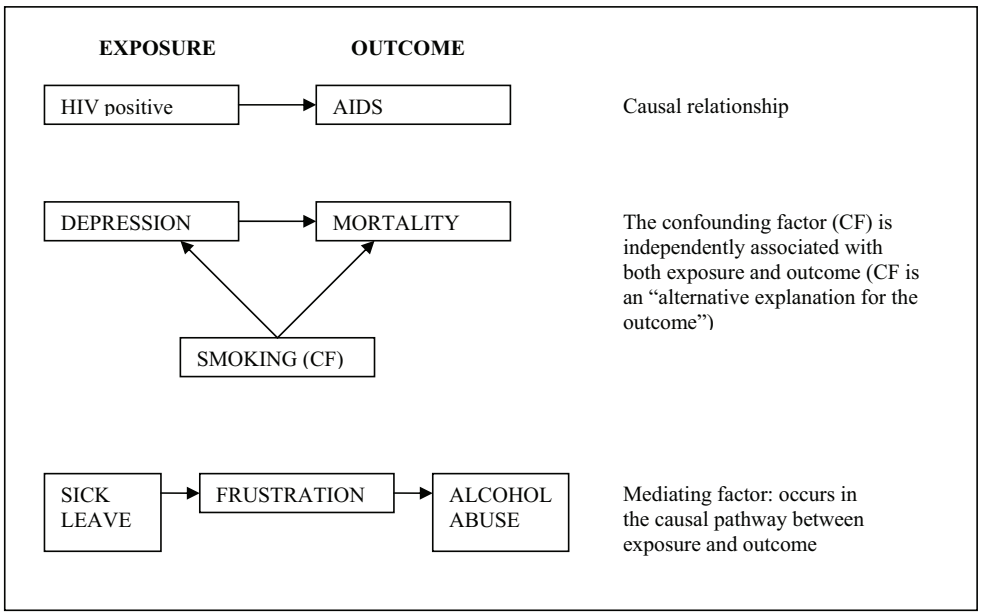
The HADS score was only operationalised as a continuous variable in Paper I, while cut-off values (dichotomisation or trichotomisation) were used in all papers to define inclusion criteria and/or outcome caseness level. A dichotomous measure certainly makes less use of the available information in the dataset than a continuous approach, and can, therefore, be considered a sort of information bias (e.g. labelling participants scoring 0-18 as healthy and all scoring 19 or above as cases in Paper IV). Nevertheless, models for screening, diagnostic purposes, and decision making often require the usage of cut-off values and thresholds. Two or more cut-off levels (Papers II and IV) represent something in between these two techniques, and, therefore, utilise more of the information and offer the possibility to analyse trends and gradients. New research clearly suggests that a combination of self-report and diagnostic interview is necessary in order to provide the clinician with enough information to make adequate treatment decisions for patients with anxiety and depression (47;48;219;226). In this setting, we suggest that using a continuous HADS score would be more appropriate.

6.1.6 Confounding factors

A confounder (from the Latin *confundere*, to mix together) is an independent risk factor for the outcome and simultaneously associated with the exposure, but should not be an intermediate step in the causal pathway between exposure and outcome (Figure 7) (208).

The previously identified confounding factors for post-MI anxiety and depression and for excess mortality in mental disorders (sociodemographic, psychosocial, lifestyle, and clinical characteristics) were available in the HUNT dataset; they showed similar associations with self-rated anxiety and depression (Papers I and II). A consequence of choosing gender stratification instead of adjusting for gender to avoid confounding in Paper I was not being able to directly compare the outcome in women and men. These issues will be addressed in more detail in the discussion of each paper.

Figure 7. Mechanisms of association (statistical dependence) between exposure and outcome.



6.1.7 External validity (generalizability)

If an observed association is considered internally valid, a subsequent judgment of the extent to which results are applicable to other populations should follow *(external validity, generalizability)*.

6.1.7.1 The construct of anxiety and depression in HADS

While the HADS was already well established as a screening questionnaire before HUNT 2, a major concern was the external (diagnostic) validity of the construct of anxiety and depression measured in this instrument. The last decade has offered extensive research on the HADS showing acceptable or good case finder abilities in various cultural and health care settings (191;227-231). Recently, Tambs (Personal communication, 2004) showed that the main problem with the HADS-subscales as casefinders in the general population was the high proportion of false-positive cases if sensitivity and specificity were set at .80. It is, therefore, likely that information collected by HADS in Paper I could have systematically over-rated caseness compared to the DSM-IV defined threshold for anxiety disorders and depressions. However, Tambs demonstrated that the proportion of false negatives was quite low, and it is noteworthy that the HADS subscales miss relatively few cases (Table 3).

Table 3. Sensitivity and specificity of HADS-D: consequences for diagnostic classification*

Depressed in the population: 5% Sensitivity: .80	5% * .80 = 4% are classified as true depressed 5% * .20 = 1% are classified as healthy
Healthy in the population: 95% Specificity: .80	95% * .80 = 76% are classified as true healthy 95% * .20 = 19% are classified as depressed
Observed depressed: 4% (correctly classified) + 19% (wrongly classified) = 23% Observed healthy: 76% (correctly classified) + 1% (wrongly classified) = 77% Total: 80% correctly classified, 20% wrongly classified	

*Modified with permission from a slide made by Professor Kristian Tambs, PhD

The diagnostic performance is to a large extent dependent on the base-rate of mental disorders (196), and cannot be judged adequately in our study because of the low number of controls (MINI negative) cases in the PHRG. We argue that the construct validity of diagnostic anxiety and depression increase with HADS symptom score (232); the extraordinarily high rates of mental disorders found in the PHRG support this assumption (Paper IV).

In conclusion, our results indicate that the HADS measures essential core symptoms of anxiety and depression because risk factors, course, and outcomes in our studies were largely the same as in diagnostic categories of the same conditions (Papers I, III, and IV). Given the good validity across different cultures and health care settings for the HADS, we suggest that our results might be generalised to other population settings to the same, or even a greater, extent than results from diagnostic studies. In addition, we should consider that observer characteristics and observer bias, type of interview, and choice of diagnostic system (DSM or ICD) often differ in these studies, and this often influences the results in an unsystematic fashion.

Two important characteristics of the HADS-D scale should be pointed out. First, the HADS-D score increased linearly with age in HUNT 2(233). Whether these results primarily reflect age effects or cohort effects, or both, cannot be answered due to the cross-sectional design in HUNT 2. However, this is in agreement with the observation that the anhedonia subtype of depression has a later onset than more severe subtypes of depression (81). A review by Jorm (15) concluded that the cross sectional relationship between anxiety, depression, and age is still controversial. Second, while there is general agreement on an increased risk (often two-fold) of depressive disorders in women compared to men, mean HADS-D score was the same

in both genders in all age groups in HUNT 2 (17). The most important explanatory factor is probably that symptoms of anhedonia are more evenly distributed in women and men than other symptoms of depression (81;234;235). Also, self-rated symptoms of depression seem to show less gender difference than observer-rated diagnostic categories in the same individuals (14;236). It might, therefore, be especially important to collect self-report information from men because they may not communicate subjective symptoms of depression, e.g. guilt, to observers as freely as women.

6.1.7.2 Other variables

Epidemiological studies have established a close association between mental disorders and substance use disorders (237). This could not be verified cross-sectionally in HUNT 2 when studying the relationship between total alcohol intake per year with a cut-off ranging from the 75th to the 97th percentile and HADS scores (Papers II-IV). One explanation might be that self-reported frequency and amount (cl alcohol) of alcohol intake, which were used in our analysis, are less sensitive to problematic alcohol use than e.g. cognitive or behavioural aspects associated with excessive alcohol use. Diagnostic interviews take into consideration both these dimensions. A particularly low attendance among those with alcohol abuse or dependence in HUNT could also have explained this finding. However, negative long-term consequences of high alcohol consumption (102;238) were confirmed in Paper I, though the effects on anxiety and depression were different in men and women in our study.

Inhabitants of Nord-Trøndelag County have a lower educational level and a lower income than average for Norway, which could lead to a higher level of anxiety and depression compared to the rest of the country (84-86). However, a recent UK study of 7,659 individuals showed that rural residents had slightly better mental health than those settled in non-rural areas (239). And there is a predominance of rural areas and lack of large cities in Nord-Trøndelag. Other characteristics are at the National level for Norway. Since HADS has proven great cross-cultural stability, we expect our results to also have considerable validity outside Norway.

6.2 Implications of specific results

6.2.1 Gender differences in post-MI anxiety and depression (Paper I)

Studies have repeatedly shown that men have less varied , often showing anger and aggression after stressful life events, while women tend to approach their problems actively in

a pro-social way (18;97-99). As observed in our study, these studies show that women express more symptoms of anxiety and depression in the time directly after the stressful event. If future studies replicate the gender-specific symptom course of anxiety and depression post-MI found in our study, mental health screening and follow-up should be focused on the first two years post-MI for women and after two years post-MI for men.

Though treatment of post-MI depression has proven to be safe and effective, it remains to be seen as to whether systematic treatment of post-MI depression and anxiety has the potential to also improve cardiac prognosis and reduce mortality (240). Finally, clinicians should keep in mind that most pre-existing risk factors for anxiety and depression, and especially previous episodes of the same conditions (241), have greater impact on post-MI anxiety and depression than the MI per se.

There was a lowering of the diagnostic threshold for MI from ICD-9 (242) to ICD-10 in 1992 (30). This most likely resulted in an increased incidence, but a decreased mean severity of CHD in those included after the introduction of ICD-10. However, psychological reactions post-MI have proven to be largely independent of MI severity (89;124;127;243). We do not expect that this change of criteria influenced our results in a significant way.

6.2.2 Risk factors for anxiety and depression (Paper I)

A supplementary finding was that risk factors for self-reported anxiety and depression (HADS caseness) much resembled established risk factors for diagnostic categories of the same conditions (80;83;84;86). Spijker and co-workers (241) also found that the risk factors for persistence and poor outcome in depression were largely the same in the general population and in clinical samples.

Given the low help-seeking in depressed persons in general and the high prevalence of depression in cardiac patients, hospitalisation after MI offers a unique chance for detection and treatment of common mental disorders. During hospitalisation after MI (and probably various other medical conditions), the assessment of relevant pre-existing risk factors for anxiety and depression should be combined with a reliable self-report of current anxiety and depression symptoms before considering a diagnostic interview and treatment measures (48;89;244).

6.2.3 Mental health screening and intervention (Paper II)

6.2.3.1 Feasibility and methodical aspects

Mass mental health screening and intervention have several limitations. In addition to the low participation rate among individuals with mental disorders in population studies (212;213), we confirmed previously demonstrated recruitment problems both among GPs and participants included in follow-up studies of mental health issues (178;179). Last year's extensive review by Mann and co-workers (183) as well as a study by Gunnell and Lewis (245) strongly recommended widespread physician education in detection and treatment of mental disorders rather than intervention restricted to individuals at particularly high risk. In addition, the 2005 Cochrane review by Gilbody et al (246) confirmed results from their previous review (180) that routine administration of instruments for anxiety and depression in non-mental health settings had little impact on detection, management, and outcome of anxiety and depression. The authors of this review concluded that routine administration of psychiatric measures in these settings is costly and does not show improved patient outcome, and that this strategy should, therefore, not be used.

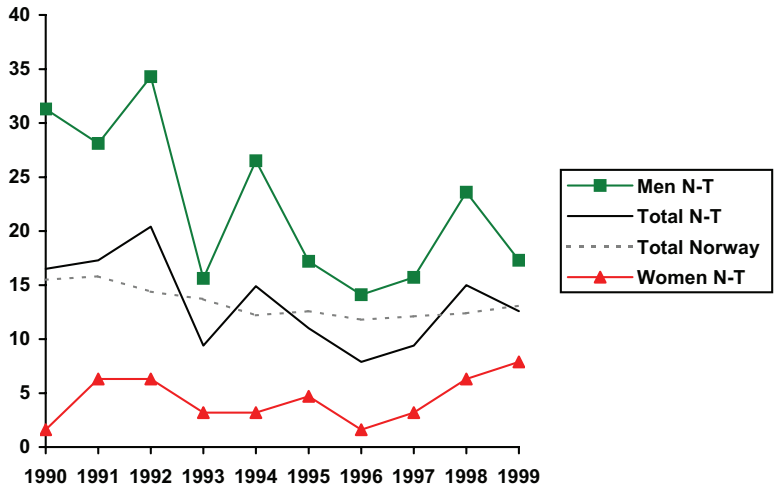
In general, population strategies are often more appropriate if the risk is widespread in the population, if the disease is common, or if it is hard to identify and control the minority at risk (209). The observation that 22% of the reference group had developed HADS caseness at follow-up (Paper IV) underlines the importance of considering population strategies.

If one still chooses the individual high risk screening strategy in general population settings, perhaps more selective screening for anxiety disorders early in adolescence and screening for depression in young adults (25-35 years) would yield better results (59). An extremely high cut-off score, as used in the IDANT study, offers the possibility to re-evaluate diagnosis and ongoing psychiatric treatment rather than detect new cases. The somewhat lower conventional cut-off (HADS-T > 19) would probably be more suited for the detection of new cases. Due to the remarkable stability of symptoms above cut-off on HADS, as pointed out in Paper IV, a delay of 3-4 weeks from HUNT 2 until the doctor appointment played little role in the IDANT study.

6.2.3.2 Suicide prevention

There was a general decrease in the annual suicide rate in Norway during the 1990ies, primarily explained by a reduction in male suicidal deaths (Figure 8). Although the numbers are small, the same tendency was observed in Nord-Trøndelag.

Figure 8. Suicides/100.000 inhabitants in Nord-Trøndelag County (regular lines) and in Norway (dotted line) for all age groups 1990-1999.



In the target population for HUNT 2 (n=94,194), the annual number of suicides varied between 7 and 15 from 1995 to 1999. However, since only 51.8% of those who committed suicide in the first five years after HUNT 2 attended the study, only between 3 and 9 suicides were recorded yearly among the 66,140 HUNT 2 participants in the same period.

In order to demonstrate efficacy, a RCT design combined with a more frequent outcome than suicide would have been necessary in IDANT. Using, for instance, referral rates to psychiatric specialist practise, suicidal ideation, help-seeking in primary care, or prevalence of sick-leave due to common mental disorders could have yielded the necessary statistical power to make conclusions concerning the efficacy of such interventions.

Though previous suicide prevention programmes have often been carried out on a large scale, the effects have been poorly documented. The above mentioned studies by Gunnell (245) and

Mann (183) showed reduced suicide rates only when widespread physician education was combined with practical measures, e.g. restricting access to lethal methods. There has also been a variety of more resource saving approaches attempted recently. A simple and inexpensive postcard intervention was carried out in a group of 772 individuals who had been hospitalised after deliberate self poisoning (8 postcards over 12 months) This reduced repetitions of episodes by approximately 50% (247), though the proportion of individual repeaters did not change.

6.2.3.3 Ethical considerations

The Norwegian Data Inspectorate and the Regional Committee for Ethics in Medical Research approved the protocols for HUNT and for IDANT. Participation in HUNT and IDANT was voluntary, and non-attendance was not questioned. All follow up projects after HUNT 2 required informed consent from the participants, and this consent could be withdrawn without explanation at any time after HUNT 2. The main focus in HUNT was to gain new knowledge about the risk factors, prevalence, and outcomes of different health conditions and illnesses based on self-reported data combined with national registries. However, several projects established cut-off values and strongly requested probable cases to contact their GP for follow-up. When this individual high-risk strategy is applied to population studies, as in the IDANT study, it is important to consider what possible burden or harm the test might inflict in those scoring above cut-off without being mentally ill (false positives) and in those showing negative test results despite a mental disorder (false negatives). Although the extremely high cut-off level in IDANT reduced the amount of false positive cases compared to using the conventional cut-off value, a substantial proportion of the PHRG group may have experienced unwanted emotional reactions and unmet intervention and treatment needs as a result of the notification and poor follow-up from the GPs.

6.2.4 Association between anxiety and depression and mortality (Paper III)

Though coming from a relatively small sample, our results indicate that increasing HADS-T symptom levels in HUNT 2 was associated with increased total mortality risk the next 4.5 years. Excess mortality estimates were comparable to results from diagnostic studies of anxiety and depression, and the same covariates mediated this effect: somatic disease, male gender, and smoking. This further strengthens the assumption that the HADS covers core symptoms of anxiety and depression.

The association between the HADS-T score and suicide risk cannot be stated in this study. This is due to lack of statistical power and the under-sampling of the reference group (the 1,308 randomly selected individuals represented only 2.2% of the 58,500 scoring 19 points or less on HADS-T). Hence, the prevalence of a rare event like suicide would vary widely in different randomly selected sub-samples from this large population. It is likely that both self-rated symptom severity and diagnostic categories can predict subgroups at increased risk for suicide, but do not perform as reliable suicide predictors in individuals.

6.2.5 Temporal stability of syndromal and sub-syndromal anxiety and depression (Paper IV)

Mechanisms of symptom stability and symptom change in anxiety and depression are similar for patient samples and population samples. Another observation of commonality is that considerable help-seeking and treatment does not seem to improve overall outcome.

In a public health situation where the risk is widespread and the population at risk is hard to control (e.g. due to symptom fluctuations), population strategies, in theory, have several advantages over an individual high-risk strategy (209). We do know that many of the risk factors associated with anxiety and depression are behavioural (exercising, smoking, eating habits, etc.). Since these negative health behaviours are often socially conditioned, population-wide strategies are often needed in order to alter harmful behaviour in a large part of a population. Example of informal self-help strategies that have proven effectiveness, are exercise, relaxation training, self-help books, and light therapy (248). Particularly in depression, the individual high risk strategy has shown discouraging results despite great efforts to improve detection and treatment (10;246).

Anhedonia might not be the most severe of the depressive symptoms, yet is often associated with a recurrent or chronic course in depression (249;250). In contrast, functional symptoms like sleep and appetite disturbance often show better spontaneous remission and response to treatment. When using self-report instruments to assess both psychological and functional aspects of anxiety and depression, it is, therefore, crucial to differentiate between total symptom reduction (used in most pharmaceutical trials) and specific improvement of symptom types, for example, anhedonia or appetite.

6.3 Limitations

The results from these studies should be interpreted in light of the following limitations:

- Non-participants in HUNT 2 (about one third of the adult population) have higher levels of anxiety symptoms and depression symptoms and higher suicide risk than participants.
- Anxiety, depression, and somatic illnesses were self-reported in HUNT.
- HADS covers psychological core symptoms of anxiety and depression, yet not the functional and somatic symptoms required for a clinical diagnosis according to ICD-10 and DSM-IV.
- HADS is a sensitive screening tool. It yields a considerable number of false-positive cases compared to diagnostic categories of anxiety disorders and depression when the conventional cut-off values are applied in the general population.
- Results from the IDANT study (Paper II) should be interpreted with caution due to the low response in this sub-study of HUNT 2.

6.4 Future research

Most previous studies of anxiety and depression in the general population, including HUNT, have been cross sectional. Therefore, we will mainly stress the importance of further prospective studies of anxiety and depression:

- Because participation in population studies is falling, it is crucial to make further use of data from HUNT 1 and HUNT 2. It is unsure to what extent data from HUNT 3 (2006-08) will be representative of the general population.
- A more comprehensive use of available biological markers (e.g. blood samples from HUNT 2) and linkage with national register data (mortality, disability pension, etc.) would improve the quality of the self-reported data in HUNT. In addition, multi-level analysis that includes social and environmental characteristics should be prioritised.
- HUNT 3 will allow for a direct comparison of HADS scores assessed ten years earlier (HUNT 2) in about 45.000 individuals. This design could clarify whether the sensitivity to age in HADS-D is primarily caused by actual age effects, cohort effects, or both, and to what extent historical effects explain changes in anxiety and depression symptom level in the population.

- Because anxiety and depression evolve at different ages (59;79), a linkage between HUNT and the Young-HUNT database (13 to 19 years) is necessary to better study determinants for, and the temporal relationship between, these conditions over the lifespan.
- Further development of models of clinical significance and adequate case criteria is crucial not only to identify those in need for therapy, but also to avoid unnecessary screening and possible harmful treatment in many individuals. Characteristics associated with a positive outcome could be reinforced in population strategies.
- Research on co-morbid cardiac and mental disorders should further explore common etiologic pathways, and be used to decide whether treatment of post-MI depression and anxiety can reduce mental symptom burden, improve cardiac prognosis, and reduce mortality in both genders.
- Future epidemiological studies of large population samples might be able to further shed light on the mechanisms of excess mortality in anxiety and depression as both single and co-morbid conditions.

7. CONCLUSIONS

General conclusions:

Overall, we argue that the HADS measures core symptoms of anxiety and depression, and that the HADS-T score showed good internal and clinical validity in a prospective population study setting:

- HADS-T symptom level in HUNT 2 reflected the level of previous help-seeking and self-rated lifetime MDE (retrospective associations), and was associated with a wide range of unfavourable sociodemographic variables, lifestyle factors, and clinical risk markers known to be associated with diagnostic categories of anxiety and depression (cross sectional associations).
- In a four year perspective, HADS-T caseness (≥ 19 points) in HUNT 2 predicted high stability of symptoms and increased total mortality (prospective associations). HADS-T ≥ 25 points in HUNT 2 was a strong predictor for mental disorder(s) at follow-up (PPV=0.72).

Specific conclusions:

- Underlying risk factors for post-MI anxiety (HADS-A ≥ 8) and depression (HADS-D ≥ 8) could be generalised to the general population, and were largely the same as for diagnostic categories of these disorders. Risk factors were similar in women and men, yet the course of anxiety and depression after a stressful event (MI) might differ in women and men compared to controls of the same gender.
- Though invitation to IDANT provoked few negative reactions in HUNT 2 participants and GPs were reported to have had a positive attitude towards psychiatry, response was low for both participants and GPs. Currently, there is a prevailing agreement that mental health screening and intervention has limited influence on detection, treatment, and course. Hence, using population strategies should be re-evaluated.
- Quantitatively, HADS-T caseness (≥ 19 points) predicted excess mortality similar to diagnostic categories of anxiety and depression. Though all seven suicides in IDANT occurred among HADS-T cases, our study lacks statistical

power to establish a reliable connection between HADS symptom severity and suicide risk.

- Self-reported anxiety and depression symptoms in the general population show similar stability patterns as those reported for diagnostic levels in clinical samples. Overall, symptoms were remarkably stable above HADS-T cut-off (19 points) over four years. However, there was considerable fluctuation across the symptom levels; this suggests that psychiatric morbidity is shared by a large number of individuals in the general population.

In sum, the assessment of self-reported symptom severity in HADS takes little effort and adds important information to standardised diagnostic classification. We suggest that the established caseness ($\geq$ 19 points) is a reliable indicator of need for further psychiatric assessment and follow-up both in the general population and in clinical settings.

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Paper I

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Anxiety and depression following myocardial infarction: gender differences in a 5-year prospective study

Ottar Bjerkeset[a,b,*], Hans M. Nordahl[b,c], Arnstein Mykletun[d], Jostein Holmen[a], Alv A. Dahl[e]

[a]HUNT Research Centre, Norwegian University of Science and Technology, Trondheim, Norway
[b]Psychiatric Department, Levanger Hospital, Levanger, Norway
[c]Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway
[d]Research Centre for Health Promotion, University of Bergen, Bergen, Norway
[e]Department of Clinical Oncology, The Norwegian Radium Hospital, Oslo, Norway

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Abstract

Objective: The aim of this study was to examine the impact of the first myocardial infarction (MI) and the relative influence of preexisting confounding factors on anxiety and depression in the following 5 years. **Methods:** A total of 23,693 participants, 35–79 years of age at baseline, attended two population-based prospective studies in 1984–1986 and in 1995–1997. They underwent physical examination and self-reported demographic, lifestyle, psychosocial, and medical health characteristics in both surveys. Outcome measure was the Hospital Anxiety and Depression rating Scale (HADS). **Results:** Five hundred twelve participants suffered their first MI in the last 5 years before follow-up. Women showed an increased risk for both anxiety and depression in the first 2 years post-MI, followed by a significant symptom reduction. In contrast, the risk for depression in men increased after 2 years post-MI. Anxiety and depression, low educational level, obesity, daily smoking, and physical inactivity pre-MI significantly predicted a poor psychiatric outcome at follow-up. **Conclusion:** Five-year follow-up after MI revealed gender-specific outcomes of anxiety and depression not previously described.

Keywords: Anxiety; Depression; Gender; Myocardial infarction; Prospective

Introduction

In patients with myocardial infarction (MI), clinical depression is underdiagnosed [1–3], associated with poor medical outcome [4–8] and with increased mortality [5–7]. Clinical studies report 17% to 22% prevalence of major depression during the first year after MI, regularly higher in women than in men [2,4,6,9–11]. Previous studies agree that post-MI anxiety and depression occur unrelated to the severity of MI and other medical factors [2,11–13]. Both Frasure-Smith et al. [6] and Schleifer et al. [11] found that two thirds of patients with major depression in the first 3 months post-MI were still depressed at their 12-month follow-up. MI patients with an initial minor depression often developed major depression within the first year [10,11], and according to Lesperance et al. [2], 50% of those depressed 1 year post-MI had developed major depression after discharge from the hospital.

Among the post-MI depressed, 30–40% had recurrence of previous depressive episode(s); this group also showed poorer medical prognosis and increased mortality compared with those without previous depression(s) [2,14]. Female gender and history of pre-MI depression(s) are well-established risk factors for post-MI depression in the first 12 months, yet the impact of MI demographic, psychosocial, and lifestyle characteristics on post-MI depression are still disputed [2,3,6,9,12]. Major depression tends to take a recurrent and chronic course [15], and comorbid anxiety disorders are common and add to the disease burden and the

* Corresponding author. HUNT Research Centre, Neptunveien 1, Verdal 7650, Norway. Tel.: +47 74075191; fax: +47 74075181.
E-mail address: ottar.bjerkeset@medisin.ntnu.no (O. Bjerkeset).

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level of impairment [16,17]. Although two studies indicate that anxiety symptoms are transient in most participants post-MI [16,17], the association between MI and anxiety has not been clearly demonstrated.

The majority of previous studies have a selection bias in regards to the focus on depression, and not anxiety, in middle-aged male patients in cardiac units, with follow-up limited to 12 months post-MI. Several questions concerning long-term outcome, gender differences, and the role of confounding factors still remain unanswered.

The population studies of Nord-Trøndelag County, Norway, HUNT 1 (1984–1986) and HUNT 2 (1995–1997), allowed for the baseline assessment of risk factors pre- and post-MI examination of anxiety and depression in a prospective, comparative design.

The following questions were explored in our study:

1. Is the risk for anxiety and depression increased throughout the first 5 years post-MI?
2. Are there gender differences in the risk for post-MI anxiety and depression in a 5-year perspective?
3. What is the impact of the actual MI on anxiety and depression compared with the impact of pre-MI risk factors?

Method

Study population

All citizens residing in the Nord-Trøndelag County aged 20 years and above received a written invitation to participate in the first (HUNT 1) and second (HUNT 2) health studies. A total of 74,997 attended HUNT 1 in 1984–1986 (88.1%), and 64,194 attended HUNT 2 in 1995–1997 (70.4%; [18]). In the cohort selected for our study, 35 to 79 years of age at baseline, 31,283 (84.1%) of the eligible attended both studies; 25,207 individuals had no angina pectoris, MI, or cerebrovascular diseases at HUNT 1 (Fig. 1). According to the Death Registry of Statistics Norway, 1108 of them (4.4%) died of MI before the follow-up at HUNT 2. Excluded also were 329 participants (1.3%) who reported their first MI 6 years or more before HUNT 2 and 77 participants (0.3%) who did not report the time of their first MI. The remaining 23,181 (92.0%) participants who were still free of MI at HUNT 2 were defined as the reference group. They were compared with the group of 512 (2.0%) participants who had suffered their initial MI less than 6 years before HUNT 2.

Procedure

Demographic data, medical diagnoses, physical symptoms and level of impairment, lifestyle factors, psychosocial characteristics, well-being, and symptoms of anxiety and depression were obtained by self-report on two questionnaires in HUNT. In both HUNT 1 and HUNT 2, Questionnaire 1 was mailed to the participants, together with the invitation to attend the study. Questionnaire 1 was filled in at home and brought to the physical examination. At the examination, the participants received Questionnaire 2 and were asked to fill it in at home and return it by mail.

Hospital Anxiety and Depression rating Scale (HADS)

In HUNT 2, the Hospital Anxiety and Depression rating Scale (HADS) was included in Questionnaire 1. HADS is a widely used self-rating scale originally designed for detecting depression and anxiety in patients with cardiac disease and other medical conditions [19]. HADS consists of seven items concerning depression (HADS-D) and seven concerning anxiety (HADS-A), each with a four-point ordinal scale to describe the symptom severity. Those who filled in only five or six items were also included in the study, and their scores were based on the sum of completed items multiplied by 7/5 or 7/6, respectively. By

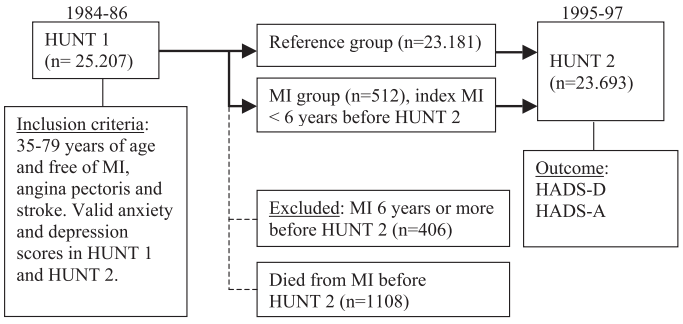

Fig. 1. Selection of cases and controls, the Nord-Trøndelag Health Study (HUNT).

using this procedure, the total number of individuals with valid HADS ratings was 62,344 (94% of attendants) in HUNT 2. HADS does not cover vegetative symptoms like sleep and appetite disturbance because they represent potentially overlapping symptoms between somatic and mental disorders. HADS-D covers mainly anhedonia and loss of interest, which are core depressive symptoms, while HADS-A covers the core anxiety features of worry and tenseness. Principal component analyses confirmed a two-factor solution in accordance with the two subscales in HUNT 2 [20]. Caseness of anxiety disorder on HADS-A and of depression on HADS-D was defined by a score of eight or above on each subscale, as recommended in the literature [21].

HADS was only available at the time of HUNT 2. However, four questions concerning anxiety and depression symptoms that addressed issues of nervousness, calmness, mood, and vitality were included in both HUNT 1 and HUNT 2. Because these four questions could not differentiate sufficiently between anxiety and depression, a compound index (anxiety and depression index, ADI) based on these four variables was validated against HADS in the total HUNT 2 population. Cut-off was set at the 88th percentile in the total population sample in HUNT, to match the HADS cut-off. This provided an acceptable indicator of whether psychiatric caseness was present in HUNT 1 (sensitivity 0.51; specificity = 0.93; Cohen's $\kappa = 0.55$). ADI constituted our baseline measure of anxiety and depression in HUNT 1.

Other variables

Workers who did not receive any kind of financial social services or pension were classified as employed. The smokers consisted of only daily cigarette smokers, and high alcohol intake was defined as alcohol consumption above the 97th percentile (frequency of intake) the last month. Those who reported doing physical exercise once or more a week were defined as exercisers. The influence of arterial hypertension at baseline on anxiety disorder and depression post-MI were tested in separate models for diastolic (>90 mm Hg) and systolic hypertension (>160 mm Hg). In these analyses, 2283 participants (9.6%) who were taking antihypertensive medication in HUNT 1 were excluded.

Statistics

SPSS version 11.01 was used for data analysis, cross tables to explore the differences between group frequencies and chi-square tests to estimate the corresponding *P* values. Univariate ANOVA was used to analyse differences

Table 1
Baseline characteristics (HUNT 1) in the reference group without MI and cases with MI at follow-up (HUNT 2)

	Reference group		MI group			
	n	%	*n*	%	*P*	*P* adjusted[a]
Total (*n* = 23,693)	23,181	97.8	512	2.2		
Demographic characteristics						
Males	10,537	45.5	365	71.3	.001	
Females	12,644	54.5	147	28.7	.001	
Mean age (years)	50.1		56.2		.001	
Males (S.D.)	49.6 (10.6)		54.9 (9.8)		.001	
Females (S.D.)	50.5 (10.8)		59.3 (9.2)		.001	
Married	19,595	84.7	414	81.2	.028	.098
Length of education					.001	.004
≤9 years	13,544	60.3	349	70.5		
9–12 years	6430	28.6	116	23.4		
≥12 years	2491	11.1	30	6.1		
Employed (sample <67 years)	16,030	75.3	343	79.0	.082	.773
Lifestyle characteristics						
Exercise ≥ once a week	13,958	61.4	279	55.5	.007	.001
Excessive alcohol intake	722	3.2	25	5.0	.012	.360
Daily smoker	7012	30.9	224	44.5	.001	.001
Psychosocial characteristic						
Anxiety and depression	2800	12.1	60	11.7	.805	.337
Clinical characteristics						
Diabetes	239	1.0	23	4.5	.001	.001
Diastolic BP >90 mm Hg	5728	24.7	207	40.4	.001	.001
Systolic BP >160 mm Hg	2068	8.9	89	17.4	.001	.001
Body mass index (BMI) >30	2367	10.2	68	13.3	.024	.023

[a] Adjusted for age and gender.

Table 2
Prevalence, mean HADS-D and HADS-A scores, and OR for anxiety and depression in the MI groups (<2 and 2–5 years since MI) compared with the reference group without MI

	Women					Men				
	I	II	III			I	II	III		
	No MI (reference)	MI <2 years ago	MI 2–5 years ago	P^a	P^b	No MI (reference)	MI <2 years ago	MI 2–5 years ago	P^a	P^b
Total *N*=23,693	*n*=12,643	*n*=39	*n*=108			*n*=10,538	*n*=102	*n*=263		
Depression										
Mean HADS-D score	4.06	5.36	4.32	.009	.382	4.25	4.76	4.85	.098	.002
95% CI	4.00–4.11	4.20–6.52	3.68–4.95			4.19–4.31	4.08–5.43	4.45–5.25		
Prevalence, age adjusted (%)	14.0	26.4	13.7	.026	.927	14.4	18.9	21.8	.195	.001
OR HADS-D ≥8 adjusted[c]	1.00	2.45	0.75	.020	.350	1.0	1.36	1.61	.241	.003
95% CI		1.15–5.24	0.41–1.37				0.81–2.27	1.17–2.20		
Anxiety										
Mean HADS-A score	4.72	5.12	3.88	.467	.015	3.79	4.22	3.85	.157	.749
95% CI	4.65–4.77	3.77–6.47	3.26–4.49			3.73–3.85	3.59–4.84	3.46–4.26		
Prevalence, age adjusted (%)	19.0	32.6	16.6	.033	.527	11.3	14.7	12.0	.277	.720
OR HADS-A ≥8 adjusted[c]	1.00	2.47	0.78	.018	.412	1.0	1.34	1.11	.336	.635
95% CI		1.17–5.23	0.44–1.41				0.74–2.45	0.73–1.70		

[a] Testing hypothesis of differences between Groups II and I.
[b] Testing hypothesis of differences between Groups III and I.
[c] Adjusted for age, educational level, marital status, employment status, exercise, alcohol consumption, smoking, BMI, systolic blood pressure, diastolic blood pressure, diabetes, and depression and anxiety score at HUNT 1.

between group means and estimation of confidence intervals, whereas binary logistic regression analysis was utilised to estimate the odds ratio (OR) for post-MI anxiety and depression. To assess time trends in the risk for post-MI anxiety and depression, time since MI was entered as a continuous variable (0–5 years) to the logistic regression model. Logistic regression was also used for interaction tests. To compare the impact of the first MI with the impact of pre-MI characteristics on long-term anxiety and depression, an hierarchical linear regression model was used, with HADS as a continuous outcome variable. The covariates adjusted for were entered in one block using forced entry. All multivariate analyses were performed stratified in terms of gender. This is due to the reported gender differences in coronary heart disease, which might also have implications on the psychological reaction to the disease. Interaction tests showed that none of the baseline predictors (see Tables 3 and 4) for anxiety and depression were specific to the MI group. All factors performed as a general risk or protecting factor for subsequent anxiety and depression in the general population. The result for the total sample is presented in Tables 3 and 4. Statistical significance was set at $P<.05$, and two-sided tests were used.

Ethics

The Norwegian Data Inspectorate and The Regional Committee for Ethics in Medical Research approved the protocols for HUNT 1, HUNT 2, and for this study. All participants in our study gave informed consent.

Results

In HUNT 1, the baseline anxiety and depression level based on the ADI index was the same in the MI and the reference groups (Table 1). Compared with the reference group, the MI group was older, dominated by men, not as educated, exercised less, smoked more, and had a higher prevalence of diabetes, diastolic, and systolic hypertension.

The 1108 deceased due to MI (Fig. 1, 64% males, mean age 66.9 years at baseline) were less likely to be married compared with the MI survivors (MI group); other baseline characteristics were the same in these two groups. More

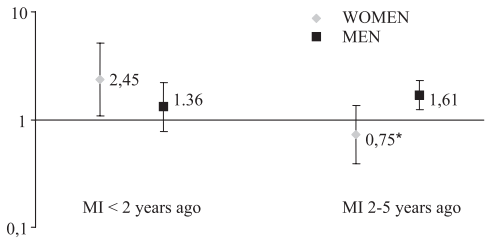

Fig. 2. Depression following MI. Adjusted (age, educational level, material status, employment status, exercise, alcohol consumption, smoking, BMI, systolic blood, pressure, diastolic blood pressure, diabetes, lack of social support, conscientiousness, and depression and anxiety score at HUNT 1) odds ratio for post-MI depression dependent on time since MI (compared with the reference group without MI). *Significant risk reduction after 2 years in women (reference is MI <2 years ago; $P=.004$). No significant change in men ($P=.33$).

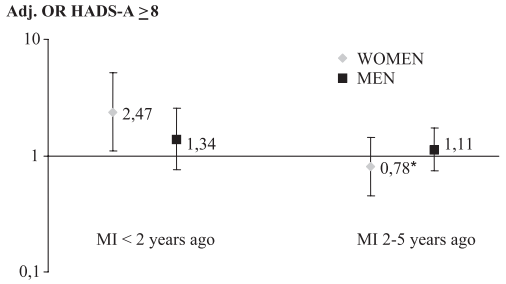

Fig. 3. Anxiety following MI. Adjusted (for age, educational level, marital status, employment status, exercise, alcohol consumption, smoking, BMI, systolic blood pressure, diabetes, lack of social support, conscientiousness, and depression and anxiety score at HUNT 1) odds ratio for post-MI anxiety dependent on time since MI (compared with the reference group without MI). *Significant risk reduction after 2 years in women (references is MI < 2 years ago; $P = .002$). No significant change in men ($P = .62$).

women than men reported taking anxiolytics (6.5% and 2.9%, $P < .001$) and antidepressants (5.3% and 2.5%, $P < .001$) daily, yet the consumption was the same in the MI and the reference groups (age adjusted $P = .93$ and .64, respectively). In the MI group, 88% of both genders reported daily use of cardiotropic medication.

Women were older at the onset of the first MI (68 vs. 63.6 years in men, $P < .001$), and the mean observational time since the first MI was 2.6 years in both genders. Overlap between anxiety and depression was substantial in HUNT 2. Unadjusted prevalence for having both conditions in the reference group was 7.9% and 5.6% for women and men, respectively, while 8.2% and 7.1% had this overlap in the MI group.

Table 3
Risk factors for anxiety (HADS-A) in HUNT 2: the impact of the first MI compared with the impact of demographic, lifestyle, psychosocial, and medical predictors at baseline in HUNT 1

	Women			Men		
	β	P	Adjusted R^2	β	P	Adjusted R^2
Model 1			.019			.023
The first MI	−.010	.270		.024	.015	
Age	−.082	.001		−.168	.001	
Education > 9 years	−.066	.001		−.053	.001	
Employed (age <67 years)	−.041	.001		−.063	.001	
Married	.017	.082		−.005	.645	
Daily smoking	.074	.001		.016	.122	
Excessive alcohol intake	.025	.008		.005	.586	
Exercise ≥ once a week	.003	.740		−.011	.267	
BMI≥30	−.017	.070		.009	.343	
Model 2			.150			.114
Anxiety and depression	.301	.001		.220	.001	

Linear regression model. All characteristics were entered in one block (forced entry) in Model 1. In Model 2, baseline anxiety and depression score were entered to Model 1.

Table 4
Risk factors for depression (HADS-D) in HUNT 2: the impact of the first MI compared with the impact of demographic, lifestyle, psychosocial, and medical predictors at baseline in HUNT 1

	Women			Men		
	β	P	Adjusted R^2	β	P	Adjusted R^2
Model 1			.028			.023
The first MI	.000	.959		.025	.011	
Age (35–79 years)	.082	.001		.014	.225	
Education > 9 years	−.061	.001		−.057	.001	
Employed (age <67 years)	−.046	.001		−.065	.001	
Married	.008	.381		−.020	.040	
Daily smoking	.061	.001		.023	.020	
Excessive alcohol intake	.010	.277		.021	.037	
Exercise ≥ once a week	−.056	.001		−.058	.001	
BMI ≥30	.033	.001		.038	.001	
Model 2			.040			.019
Anxiety and depression	.200	.001		.136	.001	

Linear regression model. All characteristics were entered in one block (forced entry) in Model 1. In Model 2, baseline anxiety and depression score were entered to Model 1.

During the 5 years following MI, the risk for developing depression and anxiety was gender specific (Table 2, Figs. 2 and 3). After MI, women had a high initial risk for both anxiety and depression, with a significant decrease after 2 years. In contrast, the risk for depression in men was only increased after 2 years post-MI. There was no significant change in the risk for anxiety disorder found in men over time. Trend tests confirmed the risk reduction over time for depression in women (adjusted OR = 0.29, $P < .01$), while borderline significance was found for anxiety (OR = 0.47, $P = .05$). No significant trends were found in men (adjusted OR = 1.20, $P = .297$ for depression and adjusted OR = 1.03, $P = .92$ for anxiety). In addition, the biological interaction between gender and time since MI was significant for depression ($P = .015$) and marginally for anxiety ($P = .050$).

In the entire MI group (0–5 years since MI, mean time 2.6 years) and in the reference group, anxiety and depression caseness at baseline was, by far, the strongest predictor for anxiety and depression in HUNT 2 (Tables 3 and 4). During the 5-year period, the relationship between MI and anxiety and depression was only significant in men. Increasing age contributed to depression in women and reduced anxiety in both genders. A completed high school or university level education and employment protected both women and men from future anxiety and depression, whereas weekly exercise

only reduced the risk for depression. Daily smoking and obesity at baseline predicted depression in both genders, while excess alcohol intake at baseline increased the risk for depression in men and anxiety in women at follow-up. Neither diabetes, diastolic, nor systolic hypertension at baseline influenced the risk for anxiety or depression.

Discussion

Post-MI depression: why do women adjust while men remain depressed?

The increased risk for depression above cut-off (HADS-D >8) during the first 2 years post-MI found in our study, only significantly elevated in women, is likely to represent a continuation of depression found in previous studies with 12-month follow-up [2,4,6,9–11]. Our results apply to the finding that women, in general, have increased vulnerability for distress and depression during the first months after adverse life events compared with men [22,23]. However, the further symptom adjustment in women and continued risk for depression in men up to 5 years post-MI has, to our knowledge, not been described earlier. In the prospective study of van Elderen et al. [24] of the coping strategies of patients with coronary heart disease, *approach* predicted high initial levels of anxiety and depression, which diminished within a year for most participants, while *avoidance* was favourable initially but caused increasing mental symptoms throughout the same period. However, this study consisted of 244 men (88%), and analyses were not carried out for each gender separately. Nevertheless, the recent study by Ketterer et al. [25] clearly linked denial of anger, depression, and anxiety in CHD patients to male gender. In addition, two other studies [26] also demonstrated that men generally had more limited coping strategies for stressful life events than women did, both in the general population and in patients with cardiac diseases. Physiological, behavioural, and psychological adaptation was poorer in men than in women in these studies.

In sum, these findings give support to the gender-specific long-term outcome in post-MI depression in our study (Fig. 2). Women tend toward an initial and time-limited psychological reaction and adaptation to the actual event (MI), while men seem less able to cope with the long-term consequences of the MI.

Post-MI anxiety: a transient condition

Increased risk for anxiety above the cut-off (HADS-A >8) was found only in women and was limited to the first 2 years post-MI. In contrast, Stern et al. [8] observed an increased risk for anxiety disorder post-MI in their total sample, which was small ($N=68$) and consisted of 85% men ($n=55$). However, our findings are consistent with the majority of the studies on anxiety symptoms following severe somatic illness and other adverse life events. When exposed to a variety of stressors or life events, women experience markedly higher levels of distress and anxiety than men do [22,23,27,28]. The recent study by Ginzburg et al. [13] showed that anxiety symptoms 1 week after MI were transient in most cases and did not predict subsequent development of PTSD. Our results support these findings, as well as the authors' opinion that such acute stress related symptoms should be labelled acute stress reaction (as in the ICD-10) instead of ASD (acute stress disorder, DSM-IV) to avoid unnecessary psychiatric stigmatisation.

Post-MI anxiety and depression: confounding factors

The large sample size in HUNT allowed us to identify a risk profile for post-MI anxiety and depression, in contrast to the divergent findings in smaller clinical studies [2,3,6,9,12]. In accordance with previous studies, we found that anxiety and depression at baseline was the strongest predictor for post-MI depression [2,14], indicating that MI triggers new episodes of recurrent depressions. The prevalence of coronary heart disease increases with age and is therefore to be expected in the elderly. This probably explains the decreased risk for post-MI anxiety at a late onset, as found in our sample. The association between higher education and reduced risk for depression concurs with previous studies [29]; our findings also indicate that this favorable effect exists concerning future risk for anxiety. The review by Wilson and Walker [30] found that women were not as psychologically affected by unemployment as men are. Our prospective data also show slightly differing effect sizes; however, employment had a protective effect regarding both anxiety and depression and was significant in both genders.

Regular physical activity is associated with reduced risk for depression and anxiety in large prevalence studies [31], yet our results indicate that the long-term protective effect of exercise is limited to depression symptoms.

Smokers report more adverse life events and psychiatric problems than nonsmokers do [32–35]. Nevertheless, the underlying mechanisms differed across the samples investigated in the previous studies. Both Black et al. [32] and Roy et al. [34] suggested that unfavourable demographic and lifestyle characteristic in the smoking population, and not the smoking per se, explained the increased risk for psychiatric symptoms. Our results, though, are from a larger sample and agree with the studies [33,35] that claim that smoking is an independent risk factor for post-MI depression and anxiety after adjusting for relevant confounding factors.

Our findings confirmed negative psychological consequences of high alcohol consumption [36,37], yet the effects on anxiety and depression were different in men and women in our study. Our data confirmed the prospective risk for depression in the middle aged and elderly obese (BMI >30), as found in the recent 5-year observational community study

by Roberts et al. [38]. Social discrimination and isolation, as well as metabolic complications like dyslipidemia, inflammation, and arteriosclerosis, contribute to adverse mental and physical health outcomes in the obese [39,40]. In spite of this, obesity did not increase the risk for subsequent anxiety in our sample. The weak association between medical diagnosis, such as diabetes and hypertension, and the development of post-MI depression was confirmed in our study [2,11,12].

Conclusion and implications

This epidemiological population study supplements the findings that there is considerable risk for anxiety and depression during the first 5 years post-MI. The gender-specific symptom pattern has not been shown earlier but may be important. Nevertheless, the relative impact of the first MI alone on long-term anxiety and depression is moderate and weaker than the influence of many preexisting sociodemographic, lifestyle, and psychological risk factors. Clinicians need to assess a number of preexisting characteristics, as well as current psychiatric symptoms, during a minimum of 6 months post-MI [2]. Reliable, valid, and cost-efficient self-rating scales should be used to screen for anxiety and depression before considering a diagnostic interview [41].

Future studies need to explore the potential benefits of treating post-MI depression and anxiety disorder in terms of improved cardiac prognosis and reduced mortality. As yet, this has not been demonstrated [42]. In addition, our findings indicate that population strategies, such as preventing smoking, obesity, and physical inactivity, could reduce both psychiatric and physical suffering.

Strengths and weaknesses of the study

HUNT is a large prospective health study of an entire adult population. Women and the elderly population were better represented, and the overall attendance rate was equal to or higher than in clinical trials on post-MI depression [2,7,11,12].

In a nonparticipant study of HUNT 2, the age-adjusted prevalence of chronic somatic diseases and the use of cardiotropic medication was the same as in the participants [43]. In HUNT, all predictors of interest were assessed before the onset of the cardiac disease. This prospective design has the potential to reduce recall bias, which may occur in clinical studies where background information is collected after MI. The results from HUNT can therefore be generalised to the total MI population, with greater confidence than in most clinical studies.

A large population study most certainly offers methodological limitations and challenges. Both mental symptoms and the MI diagnosis were self-reported in HUNT. Despite the good case-finding ability of HADS in the general population and in post-MI samples [21,41], the assessment and diagnosis of mental disorders are best done by means of a structured diagnostic interview. Although ADI and HADS do not share questions, results from the internal validation in HUNT 2 indicate that the ADI compound index is an acceptable indicator of anxiety and depression severity at baseline. HUNT 1 was not primarily designed to cover specific psychiatric topics. The absence of internationally validated instruments to assess anxiety and depression, personality dimensions, and stress at baseline still leave us with somewhat preliminary conclusions concerning the psychosocial risk profile for long-term anxiety and depression.

Researchers in HUNT did not have access to the medical records of the participants, and it is likely that the validity of self-reported somatic diagnosis varies depending on the characteristics and severity of the disease. Still, we expect valid data on MI, even by self-report, because acute MI with chest pain leads to detection and hospitalisation in more than 95% of cases [44]. A substantial agreement between self-reported MI and the GP record has been demonstrated in the British Regional Heart Study [45].

Post-MI anxiety and depression were only measured once as an outcome score in each participant, and we do not know the course of these symptoms over time. Differences in the quantity of exposure to reinfarction or other stressful life events between the surveys could have influenced the psychiatric outcome. That could not be adjusted for in our study. However, previous studies concur that both the 5- and 10-year reinfarction rate and MI-related mortality are the same in both genders when adjusting for age and other confounding factors [46,47]. In theory, gender differences in psychiatric detection and treatment after MI, as well as different adherence to cardiotropic medication, might have affected the HADS scores. However, the reported use of antidepressive, anxiolytic, and cardiotropic medication in our large sample makes this an unlikely explanation.

Predictors of post-MI anxiety disorder and depression were recorded several years before the onset of the MI, and it is uncertain to what extent or in what direction they might have changed in regards to the time of the cardiac event. We still assume that they are no less valid than the characteristics assessed at the time of the MI (hospitalisation) because risk factors often need several years to induce coronary heart disease.

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Paper II

Paper II is not included due to copyright

Paper III

Mortality in relation to self-reported mixed anxiety and depression symptoms - the HUNT study

Running head: Self-reported symptoms and mortality

Ottar Bjerkeset, Arnstein Mykletun, Alv A. Dahl, and Olav Linaker

Background Excess mortality in anxiety and depression has mostly been studied for diagnostic categories of each condition separately.
Aims To study the association between self-reported mixed anxiety and depression and mortality in the general population.
Method Population survey of 2624 individuals, defined in three groups according to their total score on Hospital Anxiety and Depression rating Scale (HADS-T); 0-19 points, 19-24 points and 25 points or above.
Results 114 deaths (4.3%) occurred during 4.5 years. Only the highest score group had increased mortality risk after adjustment for all relevant confounding factors (p=.043). However, trend tests supported a dose-response relationship between increasing HADS-T score and increasing total mortality across the three groups (p for trend = .02). All seven suicides occurred in cases detected by HADS-T (≥19 points) at baseline.
Conclusion Our sample is limited and the findings therefore tentative, yet there seems to a positive correlation between HADS-T symptom level and total mortality risk in a 4.5 year perspective.
Declaration of interest None.

Key words: anxiety, depression, mixed, mortality and self-report

Further information about the authors:
Ottar Bjerkeset MD[1,2]**, Arnstein Mykletun MA**[3] **, Alv A. Dahl**[4]**, Olav Linaker MD PhD**[5]
[1)] HUNT Research Centre, Norwegian University of Science and Technology, Trondheim
[2)] Department of Psychiatry, Nord-Trøndelag Health Trust, Levanger
[3)] Research Centre for Health Promotion, University of Bergen, Bergen
[4)] Department of Clinical Cancer Research, Rikshospitalet-Radiumhospitalet Trust, University of Oslo, Montebello, Oslo
[5)] Department of Psychiatry, Norwegian University of Science and Technology, Trondheim

Corresponding author:
Ottar Bjerkeset, MD
HUNT Research Centre,
Neptunveien 1, 7650 Verdal, Norway
Phone +47 74075191
Fax +47 74075181
E-mail ottar.bjerkeset@ntnu.no

A clinical expression of mixed anxiety and depression is common, both at symptomatic and at diagnostic levels (1-3). Genetic and neurobiological studies have also repeatedly confirmed the strong overlap between depression and particularly the features of generalized anxiety disorder (GAD) (4-6).

Studies of excess mortality in neurotic disorders have, however, for the most part been studied separately in anxiety (7;8) and depression (9), using diagnostic interviews for classification purposes. Although self-rating scales for anxiety and depression are frequently used in clinical practise and in population studies, little is known about the association between these common subjective symptoms and mortality (10;11). One of the most frequently used instruments, the Hospital Anxiety and Depression rating Scale (HADS), was included in the Nord-Trøndelag Health Study (HUNT 2, 1995-97). Its two subscales cover core symptoms of depression (HADS-D) and generalized anxiety (HADS-A).

Our aim was to examine the association between mixed anxiety and depression symptom severity (HADS-T) and the 4.5 year total mortality in a subsample from HUNT 2.

METHOD

Study setting and design

The HUNT 2 was carried out in 1995-97, and is one of the world's largest population screening and intervention surveys (12). The general purposes and methods are described thoroughly at the HUNT website (www.medisin.ntnu.no/hunt/index.php?side=english). All residents of Nord-Trøndelag County in Norway aged 20 and above received a written invitation by mail. Attached was Questionnaire 1 (Q 1), which addressed a wide range of demographic data, life-style factors, physical symptoms and illnesses, and mental health issues including the Hospital Anxiety and Depression Scale (HADS). Q1 was filled in at home and brought to the physical examination a few days later. At the examination the attendees received Questionnaire 2 (Q 2), which was filled in at home and then returned by mail. Q2 further explored the topics addressed in Q1.

Sample
Of the 92936 individuals eligible above 20 years of age, a total of 66140 (71.2%) attended HUNT 2. The total number of individuals with valid HADS-T score was 61494 (93.0 % of the participants). From these, three subgroups (total n=2624) were selected based on their HADS-T scores and included in a follow up study 4 years after HUNT 2, and mortality was one of the endpoints. Participants scoring above conventional cut-off on HADS-T (≥ 19 points) were over-sampled compared to controls. All individuals with a HADS-T score of 25 or above (99^{th} percentile, n = 662) were defined as the "psychiatric high risk group" (PHRG). A random sample of 654 individuals of those who had HADS-T scores between 19 and 24 points (95^{th} to 98^{th} percentile) constituted the "psychiatric risk group" (PRG). Finally, a random sample of 1308 individuals scoring 18 or less (under the 95^{th} percentile) was defined as the "reference group". HADS-T score above 19 points represents a conventional cut off for co-morbid anxiety and depression, whereas 25 points was chosen after a pilot testing of the first 2500 individuals in HUNT 2, and represented the 99^{th} percentile.

An important part of HUNT 2 was to give feedback on identified health risk factors to the participants (high blood pressure, elevated cholesterol levels, high BMI, etc.). The HUNT Board of Directors recommended the same procedure for participants with extremely high anxiety and depression scores. Thus, all participants in the PHRG received a written notification of the findings four to six weeks after the examination with a request to contact their GP. Next, they were invited to the Intervention study against Depression and Anxiety in Nord-Trøndelag **(**IDANT). Unfortunately, attendance was poor among participants as well as GPs in this sub-study of HUNT 2 (13). The participants in the PRG and reference groups did not receive information about their HADS-T score.

Measures

HADS
The HADS (14) is a widely used self-rating scale that has shown good psychometric properties across various patient samples and settings (15). HADS consists of seven items for depression (HADS-D) and seven for anxiety (HADS-A), each with a four-point ordinal scale to describe symptom severity: from zero (not present) to three points (strongly present). The total HADS score (HADS-T) consists of the sum of the HADS-A and the HADS-D scores, and the range is from zero to 42 points. A total HADS-T score of 19 or above has been recommended as the cut-off for probable caseness of clinically significant mixed anxiety and depression (15). Those who filled in only five or six items on HADS-A and HADS-D were included in the study. Their missing scores were substituted based on the sum of completed items multiplied by 7/5 or 7/6, respectively. HADS-D covers mainly anhedonia and loss of interest which are core depressive symptoms, while HADS-A mainly covers the core anxiety features of worry and tension.

Other variables and confounding factors
Information on age, place of residence, and marital status were obtained from the National Population Registry. The other variables were self-reported in Q 1 and Q 2. University level of education was defined as four or more years at a university or college. Persons who did not receive any kind of financial social services or pension were classified as employed. The smoker group consisted of daily cigarette smokers, and excessive alcohol intake was defined as alcohol consumption above the 97^{th} percentile in the total HUNT population (6.6 litre pure alcohol/year). The presence of one or more of the following conditions was defined as "chronic physical illness": self-report of diagnosis of asthma, myocardial infarction, angina pectoris, stroke, diabetes, or cancer. Participants with "chronic pain" were those who had reported rheumatism/degenerative joint disease, musculoskeletal pain, and/or headache lasting for one year or more.

Total mortality and cause of death
The Death Registry, Statistics Norway, records the date and cause of all deaths in Norway according to the WHO standards for classification (16). Statistics Norway merged this information with a data file of all participants in our sample. Observational time varied between 3.5 and 5.5 years in our sample; mean observational time was 4.5 years. In the current study we distinguished between death from defined physical illness(es), non-illness death (accidents or uncertain cause(s)), and suicide.

Statistics/analysis
SPSS version 11.01 was used for data analysis. Univariate ANOVA was used for estimation of confidence intervals and differences between group means in table 1. Differences between group frequencies were examined with chi-square tests in table 1 and 3, while Fisher's exact test was used to test for significance in Table 2. Cox`s proportional hazards regression model (17) was used to obtain the hazard ratios (HR) for mortality in the two psychiatric risk groups compared to the reference group. Covariates were organised thematically in blocks and each block was entered separately into the model using forced entry; the last step of the analysis was adjusted for all variables. To assess a possible trend in the mortality risk with increasing symptom severity, the HADS-T score was entered

into a separate Cox regression model as a continuous variable. A Cox regression analyses was also carried out to test for possible biological interactions of age, gender, smoking habits, and physical illness with mixed anxiety and depression in the prediction of mortality. In these analyses, HADS-T score was entered as a continuous variable and tested with each of the other factors separately. Statistical significance was set at $p < .05$ and two-sided tests were used where applicable.

Ethics

The Norwegian Data Inspectorate and the Regional Committee for Ethics in Medical Research approved the protocols for HUNT 2 and for this study. All follow up projects after HUNT 2 required informed consent from the participants.

RESULTS

All baseline characteristics differed between PHRG and the reference group, except for alcohol consumption (Table 1). Subjects in PHRG were older, more likely to be female, more often unemployed, more frequently living alone, and had a lower education level. They also reported daily smoking, physical inactivity, chronic physical illness(es), and chronic pain more frequently. The PRG shared these characteristics, but did not differ significantly from the reference group in terms of age and cohabitation status. Comparison of the two psychiatric risk groups showed that PHRG had a lower employment rate ($p < .001$), lower educational level ($p < .01$), and exercised less ($p = .027$) compared to PRG. HADS-A and HADS-D were highly correlated (Pearson`s $r = .773$, $p < .001$) in the total sample (n=2624).

According to the Death Registry 114 (4.3%) of the 2624 individuals had died during the observation period. Among the deceased, all seven people who committed suicide (6.1%) were HADS-T cases and members of the PRG or PHRG (table 2). In the two psychiatric risk groups, seven (10 %) out of the 71 deaths were suicides. The annual number of suicides between 1995 and 2000 varied between 7 and 15 in the total target population for HUNT 2 (n=94194). However, individuals within the total target population for HUNT 2 who committed suicide in this period were less likely to be participants than individuals who did not commit suicide (attendance rate 51.8% and 71.2% respectively, $p < .001$).

Table 3 shows that the point-estimated Hazard Ratio (HR) for 4.5-year total mortality increased across the three groups defined by increasing HADS-T score in all steps of the analyses. However, only subjects in the PHRG had significantly increased mortality risk compared to the reference group after final adjustment for sociodemographic factors, life-style, and clinical characteristics. Still, the trend test supported a dose-response relationship between increasing HADS-T score as a continuous variable and increasing 4.5 year total mortality across the total sample (p for trend = .02).

Among the covariates, three significantly predicted excess mortality in the final model: chronic somatic disease(s) (HR 2.70, $p < .001$), male gender (HR 1.91, $p = .001$), and daily smoking (HR 1.60, $p = .041$). The results from interaction tests between HADS-T score and gender ($p = .39$), smoking ($p = .41$), chronic somatic disease ($p = .61$), and age ($p = .52$) were all non-significant in predicting total mortality.

DISCUSSION

Main findings

The unfavourable gradient of socio-demographic (18), life style (19;20), and somatic health factors (21;22) with increasing levels of anxiety and depression is in agreement with previous reports, and confirms the importance of characterising the severity level of anxiety and depression rather than only adhering to strict dichotomisation (23).

Our results indicate a dose–response relationship between self-rated mixed anxiety and depression symptom severity and total mortality in the general population. This is in agreement with previous studies of self-rated depression in medical samples (10) and population studies using standardised psychiatric interviews for mortality prediction (24;25). However, our sample was limited and excess total mortality after final adjustment was only evident in the PHRG (HADS-T $\geq 99^{th}$ percentile). Overall, mortality rates found in HADS-T cases in this self-report study are quite similar to mortality rates found in population studies of persons diagnosed with major depression (9) or comorbid depression and GAD (26). In the latter study, increased mortality risk was found to be significantly associated with the affective disorder but not with the co-existent GAD.

Confounding factors

The relevance of the confounding factors established in the literature (9) were, except for a high alcohol consumption, confirmed by our study.

Though endpoints are few, suicides seem to explain an important share of the excess mortality even when anxiety and depression symptoms are self-reported. Suicide accounted for 10% of the deaths in the PRG and PHRG combined, which is in accordance with Wulsin et al's review of mortality in populations diagnosed with major depression (9).

The majority of studies linking depression to early death are poorly controlled, but they agree that excess mortality is primarily explained by suicides, non-natural deaths, and cardiovascular disease (9). Although results are somewhat

conflicting, the majority of previous studies find that excess mortality related to both anxiety and depression is associated with male gender. Our results suggest that this is also the case when mixed symptoms are assessed by self-report. Although the influence of anxiety and depression on mortality seems to be independent of age in this study, our sample size is too small to clarify previous conflicting findings.

Despite the considerable range of variables included in our first analysis of the HUNT 2 data, we were not able to identify any additional confounding factors that further improved our model.

Strengths and weaknesses of the study

HUNT 2 is a large health study, with high attendance among both medically ill and healthy individuals of the population (27). However, the generally poor attendance in population surveys among residents with psychiatric disorders (28;29) has probably contributed to an attenuated association between HADS-T score and mortality in this study. Also, the low participation in HUNT 2 among those who committed suicide in the years after the study indicates that population studies have limited potential both for suicide prevention and for improving the understanding of the suicidal process per se. The findings should therefore be considered tentative.

Due to the oversampling of subjects with HADS-T above 19 points in the current substudy of the HUNT 2 there were not enough cases with “pure” anxiety or depression in our sample (Table 1) to compare mortality in mixed and pure conditions. Correspondingly, the reference group only represented about 2% of those scoring less than 19 in HUNT 2, and the prevalence of a rare event like suicide could vary widely between different random samples.

It was not possible to perform a validation study of the HADS by doing diagnostic interviews in our study. Since the HADS is not a diagnostic test that exclusively identifies those who meet the DSM-IV or ICD-10 diagnostic criteria of anxiety disorders and depression, a validation would have yielded additional information about the external validity of the findings.

If the notification of the participants in the PHRG and their GPs influenced the mortality or suicide risk at all, we find it most likely that a consultation with the GP, and hopefully better treatment, would decrease the mortality and suicide rates. This, however, cannot be clarified with our design.

CONCLUSIONS

Self-report of anxiety and depression is a useful and cost-efficient method for therapy evaluation and prediction of adverse outcomes. Our findings indicate that increasing HADS-T score (anxiety and depression) is associated with increasing mortality risk. Nevertheless, the sample from this follow-up study after HUNT 2 is limited and conclusions regarding the association between HADS-T level and suicide risk cannot be made. It remains unclear whether self-report or clinical interview is the more precise predictor for early death (10).

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TABLES

Table 1. Sample characteristics at baseline (HUNT 2, 1995-97) for the reference group (HADS-T < 19), the psychiatric risk group (HADS-T 19-24), and the psychiatric high-risk group (HADS-T ≥ 25).

Characteristics	Reference group	Psychiatric risk group (PRG)	Psychiatric high risk group (PHRG)
Total N= 2624	N=1308	N=654	N=662
Psychometric characteristics			
HADS-T score, range	0-18	19-24	25-42
Mean HADS-T score (95% CI)	6.9 (6.7-7.1)	20.9 (20.6-21.1)*	28.2 (28.0-28.5)*
Mean HADS-A score (95% CI)	3.8 (3.7-4.0)	11.4 (11.2-11.6)*	15.2 (15.0-15.4)*
Mean HADS-D score (95% CI)	3.1 (3.0-3.3)	9.8 (9.6-10.0)*	13.3 (13.1-13.5)*
Pure A (HADS-A ≥ 8 & HADS-D < 8)	9.2%	14.9%*	0.8*
Pure D (HADS-D ≥ 8 & HADS-A < 8)	4.4%	5.1%	0.2%*
Mixed A and D (HADS-D & A ≥ 8)	2.1%	80.1% *	99.1% *
Demographic characteristics			
Mean age by screening, years	48.7 (47.8-49.6)	50.0 (48.8-51.2)	51.5 (50.7-52.7)*
Gender, female	52.5 (49.8-55.2)	61.8 (58.0-65.6)*	59.7 (55.9-63.4)*
University level education, %	20.9 (19.0-22.9)	14.5 (11.7-17.4)*	9.7 (6.9-12.5)*
Living alone, %	20.3 (18.0-22.5)	21.7 (18.5-24.9)	26.3 (23.1-29.4)*
Employed/under education	70.3 (67.7-72.8)	56.6 (52.9-60.2)*	42.0 (38.4-45.6)*
Life-style characteristics			
Smoker	27.6 (25.0-30.2)	41.7 (38.1-45.4)*	46.7 (43.1-50.3)*
High alcohol consumption	2.9 (2.0-3.8)	2.6 (1.3-3.9)	3.6 (2.3-4.9)
Exercise ≥ once a week	43.0 (40.4-54.7)	35.6 (31.9-39.3)*	29.9 (26.2-33.6)*
Clinical characteristics			
Chronic disease[1]	20.3 (18.0-22.6)	25.4 (22.1-28.6)*	29.6 (26.4-32.8)*
Chronic pain[2]	19.6 (17.3-22.0)	30.0 (26.7-33.3)*	32.6 (29.3-35.9)*

* unadjusted p< .05 compared to reference group

[1] Asthma, myocardial infarction, angina pectoris, stroke, diabetes, and cancer.

[2] Rheumatism/degenerative joint disease, musculoskeletal pain or headache 1 year or more.

Table 2. Total mortality and cause of death in the reference group (HADS-T < 19), the psychiatric risk group (HADS-T 19-24), and the psychiatric high-risk group (HADS-T ≥ 25) 4.5 years after HUNT 2.

	Reference group	**Psychiatric risk group (PRG)**	**Psychiatric high risk group (PHRG)**
Dead at follow-up, N (% total mortality)	43 (3.3)	30 (4.6)	41 (6.2)*
CAUSE OF DEATH			
Illness death[1], N (%)	39 (91)	24 (80)	30 (73)*
Non-illness death[2], N (%)	4 (9)	4 (13)	6 (15)
Suicidal death, N (%)	0	2 (7)	5 (12)*

* unadjusted p<.05 compared to reference group.
[1] Defined medical illness as main cause of death
[2] Unclear cause of death/accident

Table 3. Multivariate analyses of total mortality risk in the reference group (HADS-T < 19), the psychiatric risk group (HADS-T 19-24), and the psychiatric high-risk group (HADS-T ≥ 25) 4.5 years after HUNT 2; Hazard Ratios (Cox regression model).

	Reference group	**Psychiatric risk group (PRG)**	**p[1]**	**Psychiatric high risk group (PHRG)**	**p[2]**
Total N=2624	N=1308	N=654		N=662	
TOTAL MORTALITY					
Dead, count (percent)	43 (3.3)	30 (4.6)		41 (6.2)	
HR unadjusted	1.00	1.41 (0.89-2.25)	.150	1.92 (1.25-2.94)	.003
HR adj. Age and gender	1.00	1.65 (1.03-2.65)	.037	2.10 (1.36 – 3.24)	.001
Further adjustment, blocks entered separately:					
HR adj. demographic var.[3]	1.00	1.59 (0.99-2.55)	.056	1.93 (1.24 – 3.00)	.003
HR adj. life style var.[4]	1.00	1.58 (0.98-2.54)	.059	1.96 (1.27-3.04)	.003
HR adj. somatic health[5]	1.00	1.43 (0.89-2.29)	.137	1.82 (1.17-2.81)	.007
Final model					
HR adj. for all variables above	1.00	1.33 (0.83 – 2.14)	.235	1.59 (1.01-2.48)	.043

[1] Testing hypotheses of differences between reference group and PRG.

[2] Testing hypotheses of differences between reference group and PHRG.

[3] Adjusted for age, gender, educational level, living alone, and being in work or under education.

[4] Adjusted for age, gender, smoking, alcohol-consumption, and exercise.

[5] Adjusted for age, gender, somatic diseases (asthma, myocardial infarction, angina pectoris, stroke, diabetes, and cancer) and chronic pain (rheumatism/degenerative joint disease, headache and musculoskeletal pain one year or more).

Paper IV

Four year stability of syndromal and sub-syndromal anxiety and depression symptoms in the general population: The HUNT study

Running head: Symptom stability of anxiety and depression

Ottar Bjerkeset MD[1,2], Hans M Nordahl PhD[2,3], Sara Larsson MA[2], Alv A Dahl MD PhD[4], Olav Linaker MD PhD[5]

[1)] HUNT Research Centre, Norwegian University of Science and Technology, Trondheim, Norway
[2)] Department of Psychiatry, Nord-Trøndelag Health Trust, Levanger, Norway
[3)] Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway
[4)] Department of Clinical Oncology, Rikshospitalet-Radiumhospitalet Trust, Oslo, Norway
[5)] Department of Psychiatry, St. Olav's university hospital and Norwegian University of Science and Technology, Trondheim, Norway

Corresponding author:
Ottar Bjerkeset, MD
HUNT Research Centre,
Neptunveien 1, 7650 Verdal, Norway
Phone +47 74075191
Fax +47 74075181
E-mail ottar.bjerkeset@ntnu.no

ABSTRACT

Background: Both syndromal and sub-syndromal symptoms of anxiety and depression are associated with residual symptoms and a recurrence or chronic course. Although the percentage of persons at each symptom level seems to be rather constant over time, individual symptom fluctuation between levels has been considerable. Our aim was to study stability and change in self-rated anxiety and depression symptom levels in a large general population sample.

Methods: Three groups (N=2,616) with total score on the Hospital Anxiety and Depression rating scale (HADS-T) less than 19 points (N=1,308), 19 to 24 points (N=654), and 25 or above (N=654) in HUNT 2 were selected in HUNT 2 and followed up after four years. In addition, a random sample (N=152) of those at the highest symptom level at baseline was evaluated with a diagnostic interview at follow-up.

Results: Unfavourable sociodemographic characteristics and lifestyle factors, and the prevalence of life-time mental health problems, were highly associated with increasing HADS-T levels in HUNT 2. Self-rated mixed anxiety and depression symptoms followed similar longitudinal patterns as described for diagnostic levels found previously. From the lowest symptom level at baseline, 22% had reached HADS-T caseness level (19 points) or above at follow-up. HADS-T caseness at baseline predicted a chronic or recurrent symptom course in 74%, and HADS-T $\geq$ 25 at baseline predicted current mental disorder(s) in 72% at follow-up.

Conclusions: HADS-T caseness ($\geq$ 19 points) is a reliable predictor for high long-term symptom stability in the general population, and indicates need for further psychiatric assessment and follow-up.

Key words: Anxiety, depression, HADS, self report, stability, and symptom level

INTRODUCTION

The long-term effects of depressive symptoms are associated with excess individual and societal burden through social impairment (1-3), increased rates of sick leave and disability pension at a young age (4), and early death (5;6). Despite great efforts to improve detection and treatment of depression (7) and a steadily growing prescription of antidepressants (8), outcome of major depression does not seem to have improved significantly over the last decades (9;10).

Longitudinal studies of psychiatric patient samples have reported a remarkably stable percentage of patients at each symptom severity level over time, yet that individual fluctuation across different symptom levels was considerable (11-13). Findings from the community-based Zurich Cohort Study (14) demonstrated similar patterns, and argued that sub-threshold level and threshold level symptoms should be considered part of the same spectrum for both anxiety and depression.

Self-rating of anxiety and depression is widely used for clinical purposes as well as scientific purposes, yet little is known about the prognostic validity and long-term symptom course associated with this method of assessment. It is of particular importance to study to what extent individuals at lower symptom levels develop syndromal and sub-syndromal symptoms over time.

Our aim in this study was, therefore, to study the change in self-rated anxiety and depression symptoms, covering the full range of symptom severity in a large general population sample. Three groups were selected among the participants in the North-Trøndelag Health Study (HUNT 2, 1995-97): those scoring less than 19 points (n=1,308), 19 to 24 points (n=654), and 25

or above (n=654) on the Hospital Anxiety and Depression rating scale (HADS-T). This cohort was invited to a follow-up study four years later. We studied the association between anxiety and depression symptom level and a wide range of sociodemographic, lifestyle, health behaviour, and clinical characteristics. The main aim, however, was to study the change in mean symptom scores of anxiety and depression (HADS-T), anxiety (HADS-A) and depression (HADS-D), and the change across the three anxiety and depression symptom levels from HUNT 2 to four year follow-up.

METHOD

HUNT 2 - study setting and design

The Nord-Trøndelag Health Study was carried out in 1995-97 (HUNT 2), and is one of the world's largest population screening and intervention surveys (15). The general purposes, methods, and questionnaires are described at the HUNT website (http://www.hunt.ntnu.no/index_nyforside.php?side=english). All residents of Nord-Trøndelag County of Norway aged 20 and above received a written invitation to the health study by mail. Questionnaire 1 (Q1) was attached to the invitation, and addressed a wide range of demographic data, lifestyle, and physical and mental health variables including the HADS. Q1 was to be filled in at home and brought to the physical examination that took place a few days later. At the examination the attendees also received Questionnaire 2 (Q2) with an addressed, stamped envelope, which was to be filled in at home and then returned by mail. Q2 was more detailed and further explored topics addressed in Q1.

Subjects

Of the 92,936 eligible individuals aged 20 years and older, a total of 66,140 (71.2%) attended HUNT 2. The total number of individuals with valid HADS-T scores was 61,494 (93% of the participants). From these, three subgroups (N=2,616) were selected based on their HADS-T scores. All individuals with a HADS-T score of 25 or above (99th percentile, n = 662) were defined as the "psychiatric high risk group" (PHRG). A random sample of 654 individuals of those who had HADS-T scores between 19 and 24 points (95th to 98th percentile) constituted the "psychiatric risk group" (PRG). Finally, a random sample of 1,308 individuals scoring 18 or less (under the 95th percentile) was defined as the reference group (REF).

An important part of HUNT 2 was to give feedback on identified health risk factors to the participants. Thus, the HUNT Board of Directors decided that all participants in the PHRG should receive a written notification of the examination findings with a request to contact their GP (16). The participants in the PRG and reference groups did not receive information about their HADS-T score.

At follow-up four years after HUNT 2 all living members of the three groups (N=2,502) were contacted by mail. They were offered a questionnaire which included the most relevant variables from Q 1 and Q2 in HUNT 2, including the HADS. In addition, a random sample of 300 subjects from the PHRG was invited to a clinical follow-up interview a few days after they had filled in the questionnaire. They were given the choice between meeting the interviewer at a psychiatric outpatient clinic, at their GP's office, or in their home. The interviews were performed by three experienced clinicians.

Measures

Anxiety and depression (HADS)

The 14-item HADS (17) has been validated across health care settings in different cultures and age-groups, showing a high acceptance, stable psychometric properties, and good screening abilities (18-22). The HADS consists of seven items for depression (HADS-D) and seven for anxiety (HADS-A), each with a four-point ordinal scale to describe symptom severity [from 0 (not present) to 3 points (maximally present)]. The HADS-D covers mainly anhedonia and loss of interest which are core depressive symptoms, while the HADS-A covers the core anxiety features of worry and tension. A total HADS score (HADS-T) consists of the sum of the HADS-A and the HADS-D scores, and the range is from 0 to 42 points. Those who filled in only five or six items on the HADS-A and the HADS-D were also included in the study. Their missing scores were substituted based on the sum of completed items multiplied by 7/5 or 7/6, respectively.

The Mini International Neuropsychiatric Interview (MINI)

The Norwegian version of the MINI (23;24) version 5.0 was applied for the diagnoses of DSM-IV Axis I disorders. The MINI covers 23 current and lifetime axis I disorders, it has been translated into many languages, and has been used in many multi-center studies. MINI has shown good concordance with current psychiatric disorders in the SCID-I interview for most mild and moderate psychopathology (e.g. 0.84 for major depressive episode and between 0.64 and 0.76 for most anxiety disorders and alcohol abuse), but poor

concordance for current psychotic disorder (0.53), drug abuse (0.43) and social phobia (0.51). Kappa values for inter-rater reliability were all above 0.75, and 16 out of 23 values were above 0.90.

The IOWA personality disorder screen (IPDS)

The IPDS (25) was developed in order to offer a brief and sensitive personality disorder screen for both research and clinical settings. Validation in a non-psychotic psychiatric patient sample yielded a sensitivity of 92 % and specificity of 79 %.

Other variables

Information concerning age, place of residence, and marital status were obtained from the National Population Registry; all other variables were self-reported in Q1 and Q2 in HUNT 2 and in the follow-up study. University level of education was defined as four or more years at a university or college. Persons who did not receive any kind of financial social services or pension were classified as employed. Increased alcohol intake was defined as yearly alcohol consumption above the 75th percentile (210 cl pure alcohol) in the total HUNT 2 population (N=66,140).
Those who reported ≥3 hours of moderate leisure-time physical activity and/or ≥ 1 hour of hard physical activity (sweating/out of breath) weekly the last year, were defined as physically active. Lifetime major depressive episode was defined as probable in cases reporting ≥3 out of 5 listed DSM-IV criteria for this condition.

Statistical methods

SPSS version 12.01 was used for the data analysis. Univariate analyses of variance (UNIANOVA) and Chi-Square tests were used to analyse differences in baseline characteristics between the three groups, and Chi-Square tests were also used to describe change between the three symptom levels from HUNT 2 to follow-up. In a within-subject comparison design, paired-sample T-tests were used to examine mean HADS-T, HADS-A, and HADS-D scores at baseline and at follow-up. The effect size of symptom score change for each group was estimated with Cohen's at follow-up: < 0.20 no change, 0.20-0.50 weak, 0.50-0.80 moderate, 0.80-1.00 strong, and > 1.00 very strong. We used logistic regression analysis to predict non-attendance at follow-up, using forced entry for the independent variables included in the model. The positive predictive values (PPVs) of the HADS-T in detecting mental disorder(s) with the MINI diagnoses as gold standard were calculated using standard two by two tables. Statistical significance was set at p <. 05 and two-sided tests were used.

RESULTS

Relationship between HADS-T symptom level and baseline characteristics

As shown in Table 1, increasing severity of HADS-T symptom levels were closely associated with unfavourable demographic characteristics, lifestyle, and clinical parameters in our sample. All baseline characteristics differed significantly between the PHRG and the reference group except for alcohol consumption. Subjects in PHRG were older, more likely to be female, more frequently living alone, had a lower educational level, and were more often granted disability pension at a young age or listed as unemployed. In addition, they more frequently reported daily smoking, physical inactivity, chronic physical illness(es), and chronic pain. Self-reported life-time major depression (MD), previous psychiatric help-seeking, and psychopharmacological treatment were significantly more common in the PHRG. The PRG shared most of these characteristics in comparison to the reference group, but did not differ significantly in terms of mean age and cohabitation status.

Comparison between the two highest symptom levels showed several differences: the PHRG had a lower employment rate (p <.001), lower educational level (p < .010), and exercised less (p = .027) compared to PRG. Also, self-rated life-time prevalence of MD (p <.001), psychiatric help-seeking (p <.001), functional impairment due to mental problems (p <.001), daily intake of tranquillizers/hypnotics (p <.001), and use of antidepressants (p <.001) were significantly higher in the PHRG.

Four year follow-up

Differences between participants and non-participants in the follow-up study

At time of follow-up 2,502 individuals (95%) were still alive and eligible for participation in the study. Of the 1,341 (54%) participants, 1,326 (53%) had valid HADS scores and could be included in the follow-up study (Figure 1). There was an association between increasing HADS-T symptom levels and excess mortality; results from this study have been described in a previous paper (Bjerkeset et al 2006, in Press). Table 2 shows that increasing HADS-T symptom level at baseline was associated with non-attendance at follow-up (unadjusted p<.001). However, logistic regression analysis showed that among baseline characteristics, only older age (p=.025) and education below university level (p<.001) remained significant predictors for non-attendance in the follow-up study. Non-participants of the follow-up did not differ significantly from participants concerning their mean HADS-T score at baseline within the reference group (p=.10), in the PRG (p=.99), or in the PHRG (p=.95).

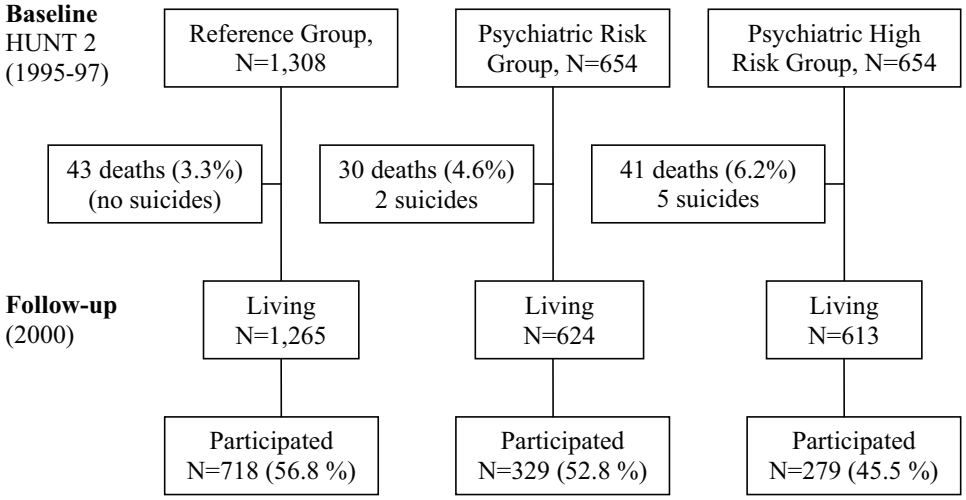

Figure 1. Mortality patterns and attendance at follow-up in the three study groups

Change in mean anxiety and depression scores at follow-up

Among all responders, there was a significant increase in mean HADS-T, HADS-A, and HADS-D scores between HUNT 2 and follow-up (Table 2). The PHRG showed a very strong HADS-T reduction ($p<.001$), whereas the reference group reported a strong symptom increase ($p<.001$) from HUNT 2 to follow-up. Mean symptom score in the PRG did not change significantly ($p=.697$) in the same time interval. Within each study group mean HADS-A and HADS-D scores changed in the same direction and effect sizes were identical or similar for both subscales. Women and men did not differ in their mean HADS-T scores; not at baseline or at follow-up in any of the groups (Table 2).

Change in anxiety and depression symptom levels at follow-up

Overall, the percentage of participants at each of the three HADS-T symptom levels remained quite stable from HUNT 2 to the follow-up four years later. In the total sample, the percentage at the lowest level was 54% at both times. At the next level there was a decrease from 25% to 22%, and consequently the percentage scoring in the highest level increased from 21% to 24% from HUNT 2 to follow-up (Table 3).

Table 3 shows the considerable individual changes between symptom levels after four years, particularly in participants from the PRG where 1/3 were still at the same level, 1/3 had moved down one level, and 1/3 had emerged to the highest symptom level. Among those at the lowest symptom level at baseline (REF), 161 new cases (22%) had emerged to HADS-T caseness level at follow-up. Of these new cases, a third had reached the highest symptom level.

At the four year follow-up, 227 (69%) subjects in the PRG and 222 (80%) subjects in the PHRG were still cases according to the conventional cut-off on HADS-T (19 points, including the two top levels). In the PHRG, a HADS-T score of 25 or above at baseline had a positive predictive value (PPV) of 0.72 in predicting one or more current mental disorder(s) at the time of follow-up four years later. When including the lifetime mental disorder(s) reported at follow-up, PPV was 0.83.

Diagnostic interviews at follow-up

Of the 300 randomly selected subjects from the PHRG, 152 (51%) accepted the invitation to a clinical interview four years later. Except for the participants being slightly younger ($p=.049$), baseline characteristics did not differ significantly between participants and non- participants.

The diagnostic performance of the HADS-T in this sample was only acceptable for detecting Axis I disorder(s), and the positive predictive value (PPV) was 0.81 at both cut-offs (19 and 25 points). For depression, anxiety disorder(s), and co-morbid anxiety and depression the PPV ranged from 0.29 to 0.58.

In total, 110 persons (72%) fulfilled the criteria for one or more Axis I mental disorder(s) at follow-up: of these 20 (18%) had current affective disorder(s) (major depression and/or dysthymia), 39 (35%) had current anxiety disorder(s), and 36 (33%) had both conditions. At average, women met criteria for 2.1 psychiatric disorders compared to the 1.2 disorders that men met the criteria for (p=.006). The 38 (25%) who had positive screening results for personality disorder (IPDS) met the criteria for significantly more axis I disorders at follow-up (2.5 vs. 1.2 disorders at average, p<.001) and had significantly higher mean HADS-T score in HUNT 2 (p=.005) and at follow-up (p=.004) compared to those who screened negative for IPDS.

DISCUSSION

Due to differences in sampling and assessment, a direct comparison of our results with previous studies (11;13;14) might be difficult. However, our results suggest that self-rated anxiety and depression symptoms in the general population show similar outcomes as found for different diagnostic levels of depression in clinical studies, both in terms of overall stability and individual symptom level fluctuations over time. There was a close relationship between increasing HADS-T levels and unfavourable baseline characteristics. In contrast to many previous studies, we found no significant gender differences in outcome. From the reference group 22% had emerged to the two higher symptom levels at follow-up and fulfilled the criteria for HADS-T caseness (19 points or above). Though those at the highest symptom level at baseline (PHRG) showed significant symptom reduction, only 20% were below HADS-T caseness at follow-up. HADS-T caseness seems to predict a chronic or recurrent course in the majority of the cases.

HADS-T symptom level and baseline characteristics

The observed gradient of unfavourable sociodemographic variables, lifestyle factors, and clinical characteristics associated with increasing HADS-T levels is in accordance with other reports (1;26). The gradient of the most severe clinical and psychosocial markers progressed above the cut-off for HADS-T caseness as they were more common in the PHRG than the PRG. This observation underlines the importance of characterising the severity level of anxiety and depression rather than only adhering to strict dichotomisation (13;14;27;28). There are several factors that could account for the discrepancy between this study and clinical studies regarding the intake of antidepressants. First, even at the highest symptom levels of anxiety and depression in the general population, detection rate could never reach the level it does in psychiatric patient samples (by definition one hundred percent). Second, due to the delay of onset of effect for antidepressants, we included only those who had used these medications daily for at least the last two months before baseline (HUNT 2). Finally, self-report of psychopharmacological treatment is, in general, likely to be underestimated (29). Our findings also suggest that the treatment of anxiety and depression should be approached not only by means of diagnosis and symptom score, but also according to the associated demographic and psychosocial characteristics as these are often contributing factors to symptom persistence and relapse (30).

Change in mean anxiety and depression scores at follow-up

Due to the extremely high HADS-T scores in the PHRG in HUNT 2, a general symptom reduction at follow-up should be expected in terms of a regression towards the mean (RTM) (31).

In the reference group, at least three mechanisms might explain the significant symptom increase. First, it is likely that a slight RTM effect is occurring. Second, the effects of age and observational time need consideration. Mean HADS-D score, and consequently mean HADS-T score, increased linearly with age in both genders in the total HUNT 2 sample (32). Whether this cross-sectional observation primarily reflects age effects or cohort effects, or both, cannot be answered in this study (33). Though, if it was mainly an age effect, four years of observation should only account for 0.5-1.0 points increase in mean HADS-T score. At the same time, a general upward trend of the prevalence of depression regardless of age, sex, and sociodemographic status was demonstrated in a recent eight-wave Belgian study (34). Yet, other studies show conflicting findings (35-37). Third, although mean HADS-T score at baseline did not differ between participants and

non-participants at follow-up, we cannot exclude the idea that attendance bias may have influenced the results in our study. According to the literature, however, a loss of subjects with high HADS scores rather than those scoring low at the time of follow-up should be expected (38;39).

The majority of studies have found that female gender predicts poor outcome in major depression (10;13;40-42), yet some report similar course and outcome in women and men (14;43-45). This was also the case in our study. This might partly be explained by the instrument used (HADS), which has anhedonia as one of its seven items and anhedonia has been proven to be the least gender specific among depressive symptoms (46).
The simultaneous change of the HADS-A and HADS-D sub scores observed in our study fits with the established theoretical constructs of the relationship between anxiety and depression as established by Clark and Watson (47). This has also been demonstrated in most recent psychometric studies of the HADS, which showed that despite a two-factor solution and a high internal consistency of the anxiety and depression subscales, the two subscales remain highly interrelated (18;20;48;49).

Change in anxiety and depression symptom levels at follow-up
Consistent with the literature, initial symptom severity was a strong predictor for the outcome in our study (13;27;46;50-52).
The reduction in mean HADS-T score in the PHRG between HUNT 2 and follow-up probably had little clinical relevance as 80% were still HADS-T cases. There was also a large proportion that was still above caseness level in the PRG at follow-up (69%). Considering the levels of psychopharmacological treatment and help-seeking, this is less than encouraging. Again, whether high HADS scores merely reflect features of anxiety and depression associated with a chronic course, or if the available treatment was not adequate, or both, is open for speculation. Though it is often considered a mild or moderate symptom (46), anhedonia has been shown to have some predictive value for recurrent and chronic depression (53). Compared to other subtypes of depression, the anhedonia subtype has a later onset (46;54) and is more strongly associated with a family history of depression (46). Both these factors are predictors for a chronic course (55). Further, Paykel (51) found that psychological symptoms at a mild or moderate level, but not major biological symptoms, were characteristic for residual symptoms in those with a poor outcome. Though tentative, in agreement with this study we suggest that a brief personality screening might have additional prognostic value concerning the outcome.

External validity
We argue that those scoring in the highest percentile at baseline (PHRG) represent syndromal level of depression and anxiety disorder. The fact that 72% in this group met the criteria for one or more current mental disorders and 83% met the criteria for current and/or lifetime mental disorder(s) at follow-up supports this assumption. Also, the mean HADS-T scores were equal (PRG) or higher (PHRG) at both times in our study compared to a cross-sectional validation study among psychiatric outpatients by Spinhoven et al (20). In sum, the majority of individuals scoring 19 points or above on HADS-T in HUNT 2 had chronic or recurrent symptoms at a severity level comparable to clinical samples. The PRG is likely to be a mix of syndromal and sub-syndromal cases, while the REF largely represents mentally healthy individuals from the general population.

Strengths and weaknesses
Compared to previous studies, we were able to recruit a relatively large general population sample. Another advantage was that the three study groups covered the full range of symptom severity on HADS, which made possible the estimation of new cases emerging from lower symptom levels than previously studied. Anxiety, depression, and all other baseline characteristics were assessed with the same methods and at the same time in all three study groups in a general health study setting. This has the potential to reduce recall bias, which is often a problem when data are collected retrospectively in a clinical setting.

Nevertheless, certain limitations concerning this study need to be addressed. First, symptoms were assessed only at baseline and follow-up. Therefore, it was not possible to describe the prospective symptom fluctuations during the period in between. However, based on the 10 year study by Kennedy et al (13), a stable number of individuals at each symptom level can be expected after the two first years of observation. Second, even though there were no differences in baseline HADS scores between participants

and non- participants at follow-up, the low follow-up rate could have influenced our results.
Third, the HADS is primarily a screening tool for medical or other non-psychiatric settings (18;56). In samples with a high prevalence of mental disorders, we agree that HADS-T at conventional cut-off (19) or higher is equally (or better) suited to detect mental disorders than are the separate subscales (20). It has also been previously shown that HADS-T predicts mental disorder(s) more precisely than it points out affective or anxiety disorders specifically, or in combination (20;57). Unfortunately, we were not allowed to contact and interview persons in the PHRG and REF. This could have allowed for a proper diagnostic validation of the HADS in this study. Finally, if the notification of the high scores to participants in the PHRG and their GPs (16) influenced the symptom course, it is assumed that it would have been in a positive direction as a consultation with their GP, and hopefully better treatment, should decrease psychiatric morbidity. This, however, could not be investigated with our design.

Conclusion
In conclusion, increasing HADS-T symptom level is associated with a wide range of sociodemographic variables, lifestyle factors, and clinical risk markers, which are relevant when a clinician assesses and treats anxiety and depression. We suggest that the established HADS-T caseness level (≥ 19 points) is a reliable predictor for high long-term symptom stability and need for further psychiatric assessment and follow-up in the general population. Overall, psychiatric morbidity in the general population is relatively constant, yet shared between many persons and several symptom severity levels. Particularly in depression, the individual high-risk strategy has shown discouraging results despite great efforts to improve detection and treatment over the last decades (7;9). Fortunately, several population based, informal self-help strategies have proven to be effective, inexpensive, and highly acceptable to the population (58).

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TABLES

Table 1. Relationship between anxiety and depression symptom severity (HADS) and demographic, lifestyle, and clinical characteristics at baseline (HUNT 2, 1995-97).

Characteristics in HUNT 2	**Reference group** N=1,308	**Psychiatric risk group (PRG)** N=654	**Psychiatric high risk group (PHRG)** N=654
Psychometric characteristics			
HADS-T score, range	0-18	19-24	25-42
Mean HADS-T score (95% CI)	6.9 (6.6-7.1)	20.9*(20.8-21.0)	28.2* (28.0-28.4)
Mean HADS-A score (95% CI)	3.8 (3.6-4.0)	11.3*(11.3-11.5)	15.1* (14.9-15.3)
Mean HADS-D score (95% CI)	3.1 (2.9-3.2)	9.8*(9.6-10.0)	13.3* (13.1-13.5)
Demographic characteristics			
Mean age by screening, years (SD)	48.7 (17.7)	49.9.0 (15.3)	51.4* (14.7)
Female gender, %	52.5	61.8*	59.8 *
University level education, %	21.6	15.9*	9.7 *
Living alone, %	20.3	21.8	26.1 *
Employed/under education (< 67 yrs), %	84.1	67.5*	51.0*
Disability pension (< 67 yrs), %	10.4	22.3*	34.7*
Lifestyle characteristics, %			
Daily smoking	29.5	43.8*	49.3*
Alcohol consumption $\geq 75^{th}$ percentile	25.2	24.4	25.5
Physical active	43.0	35.6*	29.7*
Clinical characteristics, %			
Ever sought psychiatric help	10.0	48.5*	67.9*
Self-reported life-time MDE	24.0	76.2*	93.8*
Impaired because of mental problems[1]	1.6	21.6*	46.7*
Daily intake of tranquillizers and/or hypnotics	2.6	10.7*	26.0*
Intake of antidepressants $\geq$ 2 months	2.1	15.1*	29.2*
Chronic somatic disease[2]	20.3	25.4*	29.2 *
Chronic pain[3]	12.5	18.8 *	18.8*

* unadjusted p< .05 compared to reference group

[1]Daily impairment related to mental problems at a moderate or severe level (compared to no or slight impairment).

[2] One or more of the following conditions: asthma, myocardial infarction, angina pectoris, stroke, diabetes, and cancer.

[3] Rheumatism/degenerative joint disease, musculoskeletal pain or headache 1 year or more.

Table 2. Comparison between mean HADS scores (HADS-T, HADS-A and HADS-D) in HUNT 2 (1995-97) and at follow-up (2000); paired sample T-tests[1], and effect size of change (Cohen's d).

	HUNT 2	Follow-up	p	Cohen's d
Sample (response at follow-up)				
Total sample (n=1,326, 53.0%)				
Mean HADS-T score (SD)	14.7 (9.8)	16.5 (8.7)	<.001	0.19
Mean HADS-A score (SD)	8.1 (5.5)	8.9 (4.8)	<.001	0.15
Mean HADS-D score (SD)	6.7 (5.0)	7.6 (4.8)	<.001	0.16
Reference group (n=718, 56.8%)				
Mean HADS-T score (SD)	6.7 (4.5)	12.0 (7.6)	<.001	0.87
Mean HADS-A score (SD)	3.9 (2.9)	6.7 (4.6)	<.001	0.75
Mean HADS-D score (SD)	2.9 (2.4)	5.4 (4.1)	<.001	0.77
PRG (n=293, 52.8%)				
Mean HADS-T score (SD)	20.9 (1.6)	21.0 (6.9)	.697	0.02
Mean HADS-A score (SD)	11.4 (2.4)	11.4 (3.6)	.966	0.00
Mean HADS-D score (SD)	9.7 (2.3)	9.7 (4.1)	.854	0.00
PHRG (n=279, 45.5%)				
Mean HADS-T score (SD)	28.2 (3.2)	22.8 (6.6)	<.001	1.10
Mean HADS-A score (SD)	15.3 (2.4)	11.9 (3.5)	<.001	1.15
Mean HADS-D score (SD)	13.2 (2.5)	10.9 (4.1)	<.001	0.70

[1] Women and men within the reference group, the PRG, and the PHRG had the same mean HADS-T at baseline (p-values .24, .85, and .16, respectively) and at follow-up (p-values .60, .80, and .15, respectively).
Abbreviations: PHRG=Psychiatric high risk group. PRG=Psychiatric risk group.

Table 3. Change in HADS-T symptom levels from HUNT 2 to follow-up [1]

	HUNT 2 (1995-97)	Follow-up 2000
Reference group, REF (n=718)		
HADS-T 0-18	718 (100%)	557 (78%)
HADS-T 19-24		109 (15%)
HADS-T ≥ 25		52 (7%)
Psychiatric Risk Group, PRG (n=293)		
HADS-T 0-18		102 (31%)
HADS-T 19-24	329 (100%)	102 (31%)
HADS-T ≥ 25		125 (38%)
Psychiatric High Risk Group, PHRG (n=279)		
HADS-T 0-18		57 (20%)
HADS-T 19-24		85 (31%)
HADS-T ≥ 25	279 (100%)	137 (49%)

[1)] All changes in HADS-T level at follow-up were significant ($p<.001$) compared to baseline

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Appendix

Appendix 1

Questionnaires used in HUNT I (1984-86)

A 1.1 Questionnaire 1

A 1.2 Questionnaire 2

Appendix 2

Questionnaires used in HUNT II (1995-97)

A 2.1 Questionnaire 1

A 2.2 Questionnaire 2 – one of several versions (females 20-69 years)

Appendix 3

Questionnaires used in IDANT (1995-97) and the follow-up study (2000)

A 3.1 Baseline Form IDANT

A 3.2 Questionnaire and interview follow-up study

Appendix 4

A 4.1 HUNT-brochure (HUNT II)

A 4.2 Consent statement HUNT II

A 4.3 Confirmed consent 2002 with brochure

A 4.4 Educational program, notification letter and invitation to IDANT

A 4.5 Correspondence to participants and GPs in the follow-up study

Appendix 1

Questionnaires used in HUNT I (1984-86)

A 1.1 Questionnaire 1

A 1.2 Questionnaire 2

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

SE BILDET AV BLODTRYKKSMÅLINGEN I DEN VEDLAGTE BROSJYREN

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

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

IKKE SKRIV HER

Ingen spesiell lege.. 78

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

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

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

JA NEI

Bruker du medisin for blodtrykk nå? 70
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 ...

JA NEI

Bruker du doserings-eske for tabletter? 220

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

_____ 79
Skriv her

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

_____ 89
Skriv hvilken årsak det evt. var

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

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

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)?
(Kryss av også om noen hjelper deg eller gjør det for deg) 152 JA NEI

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

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

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

ANNEN SYKDOM

Bruker du regelmessig medisin for annet enn sukkersyken? 162

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

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

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

185 / 187 / 189

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

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

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

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

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 2

Questionnaires used in HUNT II (1995-97)

A 2.1 Questionnaire 1

A 2.2 Questionnaire 2 – one of several versions (females 20-69 years)

HELSEUNDERSØKELSEN
I NORD-TRØNDELAG

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 helsa 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

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

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:

Alder

Hvor gammel var du da du fødte ditt første barn? ... 120 — år

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

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

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

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

Antall ☐

		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	

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

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.)	☐	☐

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

ALKOHOL

Hvis du er totalavholdskvinne: Gå til KOSTHOLD.

Ett kryss for hver spørsmål

	Ja	Nei
Har du noen gang følt at du burde redusere alkoholforbruket ditt? 172	☐	☐
Har andre noen gang kritisert alkoholbruken din? 173	☐	☐
Har du noen gang følt ubehag eller skyldfølelse pga. alkoholbruken din? 174	☐	☐
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	☐	☐

KOSTHOLD

	Antall
Hvor mange måltider spiser du vanligvis daglig (middag og brødmåltid)? 176	
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 / 184	☐1	☐1
Meierismør	☐2	☐2
Hard margarin	☐3	☐3
Bløt (soft) margarin	☐4	☐4
Smør/margarin blanding	☐5	☐5
Lettmargarin	☐6	☐6
Oljer	☐7	

MEDISINBRUK

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

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	☐	☐	☐

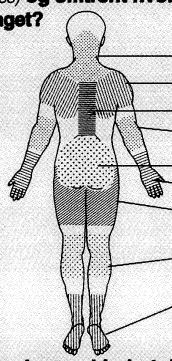
Hvor mange tabletter/stikkpiller har du eventuelt brukt av disse medisinene *alt i alt i løpet av den siste måneden*?
Skriv 0 hvis du ikke har brukt medisinen.

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 ____ mndr.

Hvis under ett år, antall måneder 313

	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 — 1–2 glass ☐ 3
Mindre enn ett ☐ 2 — 3 eller mer ☐ 4

Hvor mange brødskiver med kvitost spiser du vanligvis daglig? *Bare ett kryss*
Ingen ☐ 1 — 1–2 skiver ☐ 3
Mindre enn en ☐ 2 — 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 3

Questionnaires used in IDANT (1995-97) and the follow-up study (2000)

A 3.1 Baseline Form IDANT

A 3.2 Questionnaire and interview follow-up study

Intervensjonsundersøkelsen mot depresjon
og angst i Nord-Trøndelag (IDANT)

Basisskjema (fylles ut ved første og andre konsultasjon)

To første bokstaver i pasientens etternavn: _____
Kjønn: _____ Fødselsår: _____ Lege: _____

Pasientens reaksjoner på melding/innkalling: (Sett ring rundt riktig tall nedenfor)

1) Pasientens reaksjon på meldingen om angst/depresjon:
   1 Positiv 2 Negativ 3 Nøytral

2) Hvordan reagerte pasientens nærmeste pårørende?
   1 Positiv 2 Negativ 3 Nøytral 4 Ikke informert dem/ingen nære pårørende

3) Hvor lang tid fra pasienten fikk melding til han/hun bestilte time?
   1 <1 uke 2 1-2 uker 3 2-3 uker 4 3-4 uker 5 Innkalt 6 Hjembesøk

4) Hvordan reagerte pasienten på forespørsel om å være med i intervensjonsstudien?
   1 Positiv 2 Negativ 3 Nøytral

5) Pasientens status:
   1 Ikke kjent fra før 2 Kjent fra før uten kjente psykiske problemer
   3 Kjent fra før med kjente psykiske problemer behandlet i kommunehelsetjenesten
   4 Kjent fra før med kjente psykiske problemer behandlet i det psykiske helsevern

Tidligere psykiske problemer:

6) Alder første gang behandlet for psykisk problem: _____ år

7) Funksjonssvikt – tidligere psykisk problem:
   1 Sykmeldt 2 Attføring/rehabilitering 3 Uføretrygd

8) Pasienten har vært behandlet av?
   1 Allmennpraktiker 2 Psykiatrisk poliklinikk 3 Psykiatrisk avdeling
   4 Rusmiddelomsorgen

9) Diagnosen var: _____

10) Diagnosen er: 1 Sikker 2 Noe usikker 3 Helt usikker

11) Behandling:
    1 Støttesamtaler 2 Nevroleptika 3 Antidepressiva 4 Anxiolytika

12) Forløp over tid:
    1 Blitt bedre 2 Uforandret 3 Blitt verre

Pasientens bakgrunn:

13) Psykiske lidelser/suicid blant nære slektninger:
    1 Ingen 2 Foreldre 3 Søsken 4 Barn

14) Påkjenninger i barndom:
1 Atskillelse fra foreldre 2 Brutt familie før 12 år 3 Alvorlig mobbing
4 Overgrep (seksuelle/fysiske) 5 Utrygg atmosfære i hjemmet 6 Lite bekreftelse
7 Alvorlig legemlig sykdom 8 Annet: _____

15) Alder for start av psykiske problemer: _____ år

Pasientenes nåværende situasjon:

16) Sivilstatus:
1 Ugift 2 Gift 3 Samboende 4 Separert 5 Skilt 6 Enke/enkemann

17) Bosituasjon:
1 Bor alene 2 Bor med familie 3 Bor på institusjon

18) Arbeidssituasjon:
1 I arbeid/husmor 2 Arbeidsledig 3 Sykmeldt/attføring 4 Trygdet

19) Legemlige sykdommer: 1 Betydelig 2 Moderate 3 Alvorlige

20) Sosioøkonomiske problemer: 1 Betydelig 2 Moderate 3 Alvorlige

21) Familiære problemer: 1 Betydelig 2 Moderate 3 Alvorlige

22) Tidligere selvmordsforsøk: 1 Ja 2 Nei

23) Overforbruk av alkohol: 1 Ja 2 Nei

24)SPIFA diagnosescreening positiv:
1 Tilpasningslidelse 2 Posttraumatisk stresslidelse 3 Depresjon 4 Panikklidelse
5 Agorafobi 6 Sosial fobi 7 Generalisert angstlidelse 8 Tvangslidelse
13 Suicidalitet 14 Psykose 15 Organisk psykisk lidelse 16 Kognitiv svikt
17 Personlighetsproblemer

25) SPIFA manualdiagnoser positive:
1 Tilpasningslidelse 2 Posttraumatisk stresslidelse 3 Depresjon 4 Bipolar lidelse
5 Panikklidelse 6 Agorafobi 7 Sosial fobi 8 Generalisert angstlidelse
9 Tvangslidelse 10 Anorexia nevrosa 11 Bulimia nevrosa 12 Somatiseringslidelse
13 Udifferensiert somatoform lidelse 14 Alkoholmisbruk 15 Alkoholavhengighet
16 Stoffmisbruk 17 Stoffavhengighet 18 Suicidalitet: Stor middels liten 19 Psykose
20 Organisk psykisk lidelse 21 Kognitiv svikt

26) Relevante SPIFA skåringsskalaer:
MADRS: _____ Klinisk angstskala: _____ Mini mental status: _____
Global funksjonsvurdering (GAF): _____

27) Behandlingsplan for pasienten:
1 Ingen behandling nå 2 Behandler selv 3 Henviser til psykiatrisk poliklinikk

etikett

INTERVJU, versjon 170300
Kodebok/intervjuguide – etterundersøkelsen 2000

1.Intervjudato:_____ 2. Intervjuer:_____
Intervju start kl:_____ slutt kl:_____ 3. Intervjuvarighet:_____ min

A. Setting:
2.Intervjusted: 0 = Hjemme, 1 = Poliklinikk, 2 = Lokalt legekontor
3.Pårørende tilstede: 0 = Nei; 1 = Ja
4.Intervjutidspunkt 0 = Dagtid, 1 = Kveldstid (e. kl 15.30)_____

Man starter intervjuet med en kort presentasjon av seg selv og studien.
Har deltakeren (D) spørsmål til selvutfyllingsskjemaet (s.skjema), starter man med å gå gjennom disse og hjelper evtentuelt til med utfylling.

NB ! Ved åpne spørsmål skal D. sitt svar gjentas mest mulig ordrett, unngå "tolkning"

B. Melding fra SHUS/intervensjonen (1995-1997) – gå til de enkelte spørsmålene i s.skjema for utdyping av de avkryssede svarene

- *S.skjema nr 3:"Hvordan reagerte du på den skriftlige meldingen ?* _____

4. Kommentar/begrunnelse_____

_____

- *S.Skjema nr. 4: "Man ble i meldingen/brevet anbefalt å ta kontakt med sin lege, gjorde du dette?") ja/nei*

5. Hva var årsaken til valget ditt ? (Tips: hva er avgjørende for om den enkelte deltar eller ikke ?):
_____

---

6. Dersom nei, hva kunne evt vært gjort annerledes for at du skulle møtt ?
_____

- *S.skjema nr 5 : "Dersom nei, tok legen din kontakt eller initiativ til en timeavtale ?:" ja/nei*

7. Hva synes om det ?
_____

---

8. Status i Helsevesenet før HUNT :

0 = Pas ikke kjent hos noen primærlege, 1 = Kjent hos primærlege uten psykiske problemer, 2 = Psykiske problemer kjent for og behandlet primærlege, 3 = Psyk. problemer kjent og behandlet i 2. linjetjenesten

- *S.skjema nr 20: "Fikk du melding om andre/fysiske helseproblemer etter HUNT?" ja/nei*

Dersom nei, gå til status presens

9. Dersom ja, hvordan reagerte du på dette?:

0 = Svært positiv, 1= Positiv, 2 = Nøytral, 3 = Negativ, 4 = Svært negativ

10. Kan du utdype dette litt nærmere ? (gjerne i forhold til meldingen om angst/depresjon)

_____

_____

- *S.skjema nr 20: "kontaktet du legen din når meldingen kom ?" nei/ja*

10. Hadde du forventninger om å få hjelp for/forebygge:

Fysisk sykdom/helseplager 0 = Nei, 1 = Ja, 2 = Vet ikke/usikker ( )
Psykisk sykdom/plager: 0 = Nei, 1 = Ja, 2 = Vet ikke/usikker ( )

3.Status presens

11. Hvordan er helsa di nå ?

_____

_____

12. Har du betydelige psykiske plager nå ?: 0 = Nei 1 = Ja

- *S.skjema nr 20: Går du til behandling for psykiske plager nå* ? ja/nei

13. Hvis ja, hvem er hovedkontakt ?_____

Hvilken type behandling får du ? (sett kryss) ( )
Samtaler
Medikamentell behandling
Andre

14. Dersom nei, føler du behov for psykiatrisk behandling nå ?:
0 = Nei, 1 = Ja, 2 = Usikker/vet ikke
15. Hvis ja, helst: 0 = Hos primærlege, 1 = 2.linjetjenesten/psykiatrisk avdeling, 2 = Usikker

- *S.skjema nr. 20: Har du skiftet primærlege de siste 5 årene ?*

16. Dersom ja, hva var årsaken til dette ?:_____

_____

4.Før HUNT/bakgrunn

17. Har du hatt psykiske problemer i årene før HUNT ?:

0 = Nei
1 = Ja, vedvarende (mer enn 12 mnd sammenhengende)
2 = Ja, episodisk/tilbakevendende

18. Hvis ja, alder for start av psykiske problemer: _____år

19. Hvis ja, har du fått behandling for psykiske problemer før HUNT ?
1 = Ja, alder første gang:_____
2 = Nei, aldri fått behandling før HUNT – *gå til 23.*

20. Antall ganger innl psyk avd:
0 = 1 gang, 2 = 2 ganger, 3 = 3-4 ganger, 4 = >5 ganger,5 = >10 ganger, 6 = aldri innlagt ( )

21. Poliklinisk behandling
1 = Ja, antall perioder og varighet

2 = Nei, aldri
22. Hvilken type behandling har du fått tidligere ? Sett kryss:
Samtaler
Psykofarmakologisk: _____
ECT
Annen :_____

TILBUD OM KORT PAUSE

5. Diagnostisk screeningintervju M.I.N.I (vedlagt).

23. **(Fra MINI, ikke spør om dette på nytt)**
Dersom tidligere suicidalforsøk: antall/metode/alvorlighetsgrad:

Intervjuet avsluttes med en kort oppsummering for deltakeren, særlig i forhold til screeningintervjuet.

Skal det sendes melding til primærlege ? ja/nei
Samtykkeerklæring, husk en underskrift for hvert punkt i samtykket.

SLUTT

hunt

Helseundersøkelsen i Nord-Trøndelag

Kjære deltaker !

For om lag 4 år siden deltok du i HUNT-undersøkelsen, og vi er svært takknemmelig for at du også stiller opp i denne etterundersøkelsen.

Vi starter med å spørre deg om hvordan du hadde det, og hva som skjedde i tiden rundt den siste HUNT-undersøkelsen for ca 4 år siden.

TILBAKEBLIKK PÅ HUNT (1995-97)

1. Hadde du noen vesentlige psykiske plager (f.eks angst- og /eller depresjon) da du møtte til den siste HUNT-undersøkelsen?

☐ Nei ☐ Ja ☐ Usikker/husker ikke

Hvis ja, beskriv plagene:

☐ Vedvarende (mer enn 12 mnd sammenhengende)
☐ Episodisk/tilbakevendende
☐ Aktuell stress/krisesituasjon

2. Gikk du allerede i behandling for psykiske plager (f.eks angst- og/eller depresjonsplager) når du møtte til HUNT-undersøkelsen?

☐ Nei
☐ Ja, til primærlege
☐ Ja, til psykiatrisk poliklinikk/sykehus eller privat spesialist
☐ Ja, både til primærlege og sykehus/spesialist

3. Hvordan reagerte du på den skriftlige meldingen du fikk like etter HUNT (for om lag 4 år siden) om at du kunne ha angst- og/eller depresjonssymptomer og burde søke hjelp?

☐ Svært positiv ☐ Negativ
☐ Positiv ☐ Svært negativ
☐ Nøytral

4. Man ble i meldingen anbefalt å ta kontakt med sin lege, gjorde du dette?

☐ Nei ☐ Ja

Dersom du svarte ja, gå til spørsmål nr. 6

5. Hvis nei, tok legen din kontakt med deg?

☐ Nei ☐ Ja, telefonisk eller skriftlig kontakt
☐ Husker ikke

6. Førte denne meldingen til at det ble startet behandling for dine psykiske plager?

☐ Ja, det ble startet ny behandling hos primærlege
☐ Ja, jeg ble henvist til psykiatrisk poliklinikk/avdeling pga. meldingen
☐ Nei, jeg fortsatte i samme behandling for mine psykiske plager
☐ Nei, ingen videre oppfølging/behandling for psykiske plager
☐ Usikker/husker ikke

7. Førte meldingen til at din lege ble mer oppmerksom på eller endret sin holdning til dine psykiske plager ?

☐ Ja, det skjedde en positiv forandring
☐ Nei, ingen forandring
☐ Husker ikke/vet ikke

AKTUELL/TIDLIGERE LIVSSITUASJON

8. Hva er din sivilstand nå ?

☐ Gift ☐ Skilt
☐ Samboer ☐ Enke/enkemann
☐ Separert ☐ Enslig/har aldri vært gift

9. Hvordan er helsa di nå?

☐ Dårlig
☐ Ikke helt god
☐ God
☐ Svært god

10. Har du, eller har du hatt:

	Ja	Nei	Alder første gang
Lavt stoffskifte	☐	☐	_____
Astma	☐	☐	_____
Hjerteinfarkt	☐	☐	_____
Angina pectoris (hjertekrampe)	☐	☐	_____
Hjerneslag/hjerneblødning	☐	☐	_____
Diabetes	☐	☐	_____
Kreftsykdom	☐	☐	_____
Annen langvarig sykdom:	☐	☐	_____

11. MUSKEL-/SKJELETTPLAGER

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?

☐ Ja ☐ Nei

Dersom ja, hvor lenge har plagene vart sammenhengende?

Svar for det området hvor plagene har vart lengst

Hvis under 1 år, oppgi antall mnd. _____
Hvis 1 år eller mer, oppgi antall år. _____

12. DAGLIGE FUNKSJONER

Har du noen langvarig sykdom, skade eller lidelse av fysisk eller psykisk art som nedsetter dine funksjoner i ditt daglige liv? *(Langvarig = minst ett år)*

☐ Ja ☐ Nei

Hvis JA:

Hvor mye vil du si at dine funksjoner er nedsatt?

☐ Litt nedsatt ☐ Middels nedsatt ☐ Mye nedsatt

	Ja	Nei
Hemmet pga. kroppslig sykdom?	☐	☐
Hemmet pga. psykiske plager?	☐	☐

13. KAFFE/ALKOHOL/RØYKING

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

	Antall kopper
Kokekaffe	
Annen kaffe	

Alkohol:
Er du total avholdsmann-/kvinne?
☐ Ja ☐ Nei

Hvor mange ganger i måneden drikker du vanligvis alkohol?
Antall ganger ☐

Regn ikke med lettøl. Sett 0 hvis mindre enn 1 gang i mnd.

Røyker du sigaretter daglig ? ☐**Ja** ☐**Nei**

Hvis ja, hvor mange pr. dag? ☐ sigaretter daglig

14. FYSISK AKTIVITET

I fritida:
Hvordan har din fysiske aktivitet i fritida vært det siste året? *(Timer pr uke)*
Tenk deg et ukentlig gjennomsnitt for året. Arbeidsveg regnes som fritid

	ingen	under 1-2 timer	3 timer og mer
Lett aktivitet *(ikke svett andpusten)*	☐	☐	☐
Hard fysisk aktivitet *(svett/andpusten)*	☐	☐	☐

15. HVORLEDES FØLER DU DEG

Har du <u>de siste to ukene</u> følt deg:

	Nei	Litt	En god del	Svært mye
Trygg og rolig	☐	☐	☐	☐
Glad og optimistisk	☐	☐	☐	☐
Nervøs og urolig	☐	☐	☐	☐
Plaget av angst	☐	☐	☐	☐
Irritabel	☐	☐	☐	☐
Nedfor/deprimert	☐	☐	☐	☐
Ensom	☐	☐	☐	☐

Beskriv dine følelser deg <u>den siste uka</u>
(sett et kryss for hvert spørsmål)

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

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

Jeg kan le og se det morsomme i situasjoner
☐Like mye nå som før ☐Avgjort ikke som før
☐Ikke like mye nå som før ☐Ikke i det hele tatt

Jeg har hodet fullt av bekymringer
☐Veldig ofte ☐Av og til
☐Ganske ofte ☐En gang i blant

Jeg er i godt humør
☐Aldri ☐Ganske ofte
☐Noen ganger ☐For det meste

Jeg kan sitte i fred og ro og kjenne meg avslappet
☐Ja, helt klart ☐Ikke så ofte
☐Vanligvis ☐Ikke i det hele tatt

Jeg føler meg som om alt går langsommere
☐Nesten hele tiden ☐Fra tid til annen
☐Svært ofte ☐Ikke i det hele tatt

Jeg føler meg urolig som om jeg har sommerfugler i magen
☐Ikke i det hele tatt ☐Ganske ofte
☐Fra tid til annen ☐Svært ofte

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

Jeg er rastløs som om jeg stadig må være aktiv
☐Uten tvil svært mye ☐Ikke så veldig mye
☐Ganske mye ☐Ikke i det hele tatt

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

Jeg kan plutselig få en følelse av panikk
☐Uten tvil svært ofte ☐Ikke så veldig ofte
☐Ganske ofte ☐Ikke i det hele tatt

Jeg kan glede meg over gode bøker, radio og TV
☐Ofte ☐Ikke så ofte
☐Fra tid til annen ☐Svært sjelden

16. ØKONOMI

Mottar du noen av følgende offentlige ytelser?

	Ja	Nei
Sykepenger/sykelønn/ rehabiliteringspenger	☐	☐
Ytelser under yrkesrettet attføring	☐	☐
Uførepensjon	☐	☐

Dersom ja:
Innvilget årstall: _____
Hva var årsaken til uførhet (diagnosen)?:
_____

Alderspensjon	☐	☐
Sosialstøtte	☐	☐
Arbeidsløshetstrygd	☐	☐
Overgangsstønad	☐	☐
Etterlattepensjon	☐	☐
Andre ytelser	☐	☐

17. VENNER/SOSIALT

Hvor ofte tar du vanligvis del i foreningsvirksomhet som f.eks. syklubb, idrettslag, politiske lag, religiøse eller andre foreninger?
☐ Aldri, eller noen få ganger i året
☐ 1-2 ganger i måneden
☐ Omtrent en gang i uka
☐ Mer enn en gang i uka

18. MEDISINBRUK

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

Hvis ja, angi type medisin og dosering som du bruker nå:

Navn	Styrke	Antall tabl. daglig
Eks: Renitec tabeltter	20 mg	1
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Hvis JA:
Hvor mange måneder har du brukt følgende medisiner (skriv antall måneder)
Sett 0 hvis du ikke har brukt medisinene

Smertestilllende _____
Beroligende medisin _____
Sovemedisin _____
Medisin mot depresjon _____

Hvor ofte har du brukt avslappende/beroligende medisin eller sovemedisin den siste måneden?
☐ Daglig
☐ hver uke, men ikke hver dag
☐ sjeldnere enn hver uke
☐ aldri

19. 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
☐ Meget fornøyd
☐ Ganske fornøyd
☐ Både/og
☐ Nokså misfornøyd
☐ Meget misfornøyd
☐ Svært misfornøyd

20. ARBEID

Hva slags arbeidssituasjon har du nå?
(Ett eller flere kryss)
Lønnet arbeid ☐
Utdanning, militærtjeneste ☐
Lønnet arbeid, sykemeldt nå ☐
Arbeidsledig, permittert ☐
Selvstendig næringsdrivende ☐
Pensjonist/trygdet ☐
Heltids husarbeid ☐

Hvis du NÅ ikke har inntektsgivende arbeid eller du ikke har heltids husarbeid: Gå til BRUK AV HELSETJENESTER.

Har du i løpet av de siste 12 månedene hatt sykefravær?

	Ja	Nei
Med egenmelding	☐	☐
Med sykmelding fra lege	☐	☐

Hvis JA:
Hvor lenge til sammen? *(Bare ett kryss)*
☐ 2 uker eller mindre
☐ 2-8 uker
☐ mer enn 8 uker

Har du i løpet av de siste 4-5 årene skiftet yrke eller arbeidsplass? ☐ Ja ☐ Nei

21. BRUK AV HELSETJENESTER

Har du gått til lege/behandling for kroppslige plager det siste året ?
☐ Ukentlig eller oftere
☐ 1-3 ganger pr mnd
☐ 2-3 ganger pr halvår
☐ 1-2 ganger pr år
☐ nei/aldri

Har du gått til lege/behandling for psykiske plager det siste året ?
☐ Ukentlig eller oftere
☐ 1-3 ganger pr mnd
☐ 2-3 ganger pr halvår
☐ 1-2 ganger pr år
☐ nei/aldri

	Ja	Nei
Har du vært innlagt i sykehus i løpet av de siste 5 årene?	☐	☐
Har du hatt frikort hos legen i løpet av de siste 5 årene ?	☐	☐

Hvis Ja:
☐ et år ☐ 2-3 år ☐ mer enn 3 år

Har du skiftet primærlege i løpet av de siste 5 årene ? ☐ Ja ☐ Nei

Hvis Ja:
☐ 1 gang ☐ 2 ganger ☐ 3 ganger eller mer

Fikk du etter siste HUNT undersøkelse (95-97) melding om noen fysiske helsetilstander som burde følges opp?
(f.eks blodtrykk, astma, hørsel/syn, vekt etc.)
☐ Ja ☐ Nei

Kontaktet du legen din når meldingen kom ?
☐ Ja ☐ Nei

22. HUMØR OG TRIVSEL

Angi hvordan du har følt deg den siste måneden:

	Aldri	Noen ganger	Ganske ofte	For det meste
I godt humør	☐	☐	☐	☐
I dårlig humør?	☐	☐	☐	☐

23. 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

☐ nesten aldri ☐ ganske ofte
☐ noen ganger ☐ nesten alltid

Jeg koker av sinne, men jeg viser det ikke til andre

☐ nesten aldri ☐ ganske ofte
☐ noen ganger ☐ nesten alltid

24. 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.

Jeg har en positiv holdning til meg selv

☐ svært enig ☐ uenig
☐ enig ☐ svært uenig

25. HVORDAN DU FØLER DEG NÅ

Føler du deg stort sett sterk og opplagt, eller trøtt og sliten? *(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

26. HVILE OG AVSLAPPING

Har du i løpet av siste måned hatt innsovningsproblemer? *(Bare ett kryss)*

☐ nesten hver natt ☐ av og til
☐ ofte ☐ aldri

Har du i løpet av siste måned våknet for tidlig og ikke fått sove igjen? *(Bare ett kryss)*

☐ nesten hver natt ☐ av og til
☐ ofte ☐ aldri

27. HVORDAN DU HAR HATT DET

Har det noen gang i løpet av ditt liv vært <u>sammenhengende perioder på 2 uker eller mer</u> da du:

	Ja	Nei
Følte deg deprimert, trist og nedfor	☐	☐
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	☐	☐

Appendix 4

A 4.1 HUNT-brochure (HUNT II)

A 4.2 Consent statement HUNT II

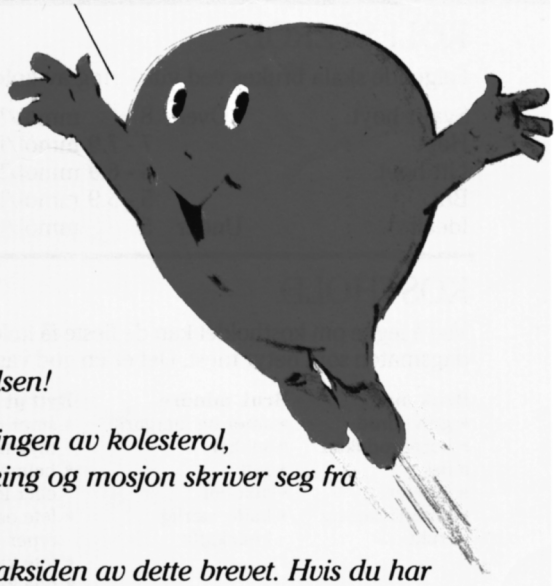
A 4.3 Confirmed consent 2002 with brochure

A 4.4 Educational program, notification letter and invitation to IDANT

A 4.5 Correspondence to participants and GPs in the follow-up study

Statens helseundersøkelser
Postboks 8155 Dep, 0033 OSLO

"HER KOMMER RESULTATENE DINE FRA HJERTE-KARUNDERSØKELSEN"



Nordmann Petter 1
Hunt-Åsen

7600 Nord Trøndelag

Kjære Petter Nordmann!

Mange takk for fremmøtet til hjerte-karundersøkelsen!

Nedenfor vil du finne dine egne resultater fra målingen av kolesterol, blodtrykk, høyde og vekt. Opplysningene om røyking og mosjon skriver seg fra svarene dine på spørreskjemaet.

Når det gjelder tolking av resultatene, viser vi til baksiden av dette brevet. Hvis du har spørsmål i denne sammenheng, vil vi anbefale at du tar kontakt med legen din.

Med vennlig hilsen
*KOMMUNEHELSETJENESTEN * FYLKESLEGEN*
STATENS HELSEUNDERSØKELSER

1719 1 41

UNDERSØKELSE 5.september 1995:

BLODSUKKER:	4.7 mmol/l.
KOLESTEROL:	6.3 mmol/l.
BLODTRYKK:	Systolisk: 196 mm. Diastolisk: 116 mm.
HØYDE:	175 cm.
VEKT:	85.5 kg.
MOSJON:	Lett aktivitet: minst 3 timer/uke. Hard aktivitet: minst 3 timer/uke.
DAGLIG RØYKING:	Røyker daglig 7 sigaretter.
JERNINNHOLD I BLODET:	Normalt.

K o m m e n t a r :

Vi anbefaler ny undersøkelse. Legen din har fått beskjed om dette. Vennligst bestill time selv hos din lege. Forøvrig viser vi til rådene på baksiden av dette arket. Ta dette svarbrevet med til legen!

Vi har denne gangen også målt blodsukkeret ditt. Dersom blodsukkeret er over 9.0 mmol/l og du ikke alt går til kontroll for sukkersyke, vil vi anbefale deg å få målt en ny fastende blodprøve hos legen din.

Svarene dine på spørreskjemaet tyder på at du er plaget av angst eller depresjon. Vi anbefaler at du tar kontakt med din lege.

Takk for at du møtte fram og lykke til!

VEND!

Da du møtte til hjerte-karundersøkelsen, fikk du med deg denne brosjyren

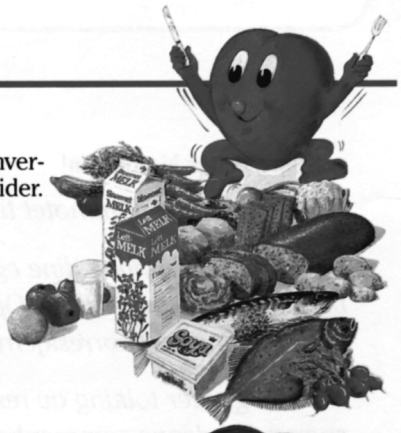
Der fikk du noen råd om hvordan du kan forebygge hjerte-karsykdom. Hva om du tok en ny titt på disse rådene?

KOLESTEROL

Følgende skala brukes ved vurdering av kolesterol-resultatene:

Svært høyt:	Over	8	mmol/l
Høyt :		7 - 7.9	mmol/l
Litt høyt :		6 - 6.9	mmol/l
Bra :		5 - 5.9	mmol/l
Ideelt :	Under	5	mmol/l

KOSTHOLD



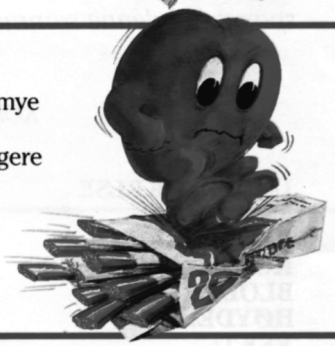
Ved å legge om kostholdet kan de fleste få kolesterolnivået ned. Det er hverdagsmaten som betyr mest. Det er en god vane å ha regelmessige måltider.

Bruk mer
- grovt brød
- kornprodukter
- fisk
- poteter
- grønnsaker og frukt

Bruk mindre
- smør og margarin
- sukker
- salt
- alkohol
- kaffe, særlig kokekaffe

Bytt ut
- smør og fast margarin med myk margarin eller olje
- helmelk med skummet melk eller lettmelk
- fete oster med halvfete eller magre typer
- fete kjøttvarer med magre
- noe kjøtt med fisk

TOBAKK



Røyking er en av de viktigste årsaker til dårlig helse. De som røyker, blir mye oftere rammet av hjerte-karsykdommer, kreft, kroniske lungesykdommer og andre lidelser. I det hele: Sett under ett, er røykere mer syke og dør tidligere enn ikke-røykere. Dette kan forebygges!

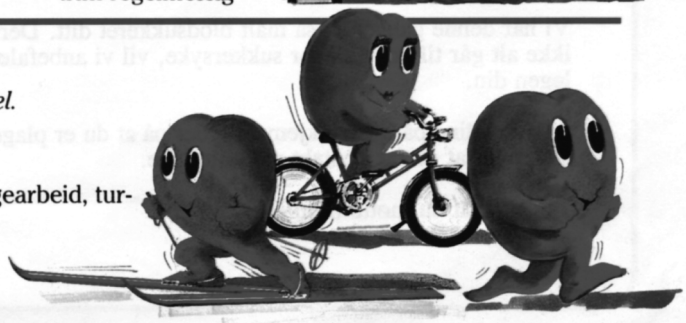
STUMP RØYKEN! Mange vil oppleve at det er lettere å stumpe røyken enn de trodde på forhånd. Har du problemer med å greie det, snakk med helsesøster eller lege, og spør etter brosjyrer eller om det vil bli arrangert røykeavvenningskurs i kommunen din.

BLODTRYKK

Høyt blodtrykk er en viktig årsak til bl.a. hjerneslag. Holder blodtrykket i 40-års alderen seg under 160 mm for systolisk og 90 mm for diastolisk trykk, trengs det ikke kontroll før etter ca. 3 år. Er trykket høyere, bør det kontrolleres oftere og det er særlig nødvendig at du legger deg til levevaner som motvirker ytterligere økning:

- hold deg til kostholdet som er anbefalt ovenfor
- bruk mindre salt i maten
- vær forsiktig med alkohol
- stump røyken
- pass på vekten
- trim regelmessig

MOSJON



Hold deg i form – det er viktig for helse og trivsel.

- bruk bena/sykkel til arbeid
- gå kveldsturer
- ta opp hobbyer hvor du bruker musklene: hagearbeid, turgåing, svømming, jogging m.m.
- meld deg på trimgruppe i ditt nærmiljø

BEYER-HECOS 3210901 - 35.000 - 02.96

NAVN

ADRESSE

F NR 11

KOMMUNE 85-88

DAG MND. ÅR 17

HØYDE VEKT ANM. 25

AVVIK ARM MAN AP.NR TSM 32

MÅLING 1		MÅLING 2		MÅLING 3	
MAP 35	S 38	MAP 41	S 44	MAP 47	S 50
HR 53	D 56	HR 59	D 62	HR 65	D 68

SAMTYKKE

69 JA/NEI 1 2 3 4 5 74

OMKRETS

MIDJE 77 HOFTE 80

Intervjuspørsmål til kvinner 59 år og yngre:

Har du for tiden regelmessig menstruasjon? ..... JA/NEI 81

Om svaret er NEI:
- Menstruasjonen sluttet av seg selv for minst 6 mnd. siden 1
- Usikker på om menstruasjonen har sluttet (mulig overgangsalder) 2
- Gravid 3
- Aldri hatt menstruasjon 4
- Menstruasjonen sluttet etter underlivsoperasjon 5
- Uregelmessig menstruasjon (vekselvis lange og korte pauser) 6
- For tiden ikke regelmessig menstruasjon (f.eks født eller bruker hormoner) 7 82

Hvis du ikke lenger har menstruasjon, hvor gammel var du da den sluttet? Alder i år 84

e.s.trykk-Oslo

SAMTYKKEERKLÆRING

I brosjyren «*Helseundersøkelsen i Nord-Trøndelag - et tilbud til deg*» er jeg orientert om helseundersøkelsens formål. Jeg har også fått brosjyren «*hunt - spesial*», som omhandler de spesialundersøkelsene jeg kan få tilbud om. Jeg er kjent med at opplysninger om meg blir behandlet strengt fortrolig og at undersøkelsen er godkjent av Datatilsynet og Regional komité for medisinsk forskningsetikk. Det er ikke satt noen spesiell tidsbegrensning for hvor lenge opplysningene kan lagres, men jeg er klar over at jeg på hvilket som helst tidspunkt kan trekke meg fra undersøkelsen og kan reservere meg mot bruk av opplysninger om meg.

1. Jeg samtykker i at resultater fra blodprøven og andre deler av undersøkelsen, samt resultater fra eventuelle spesialundersøkelser blir sendt til den legen jeg har oppgitt på spørreskjemaet.
2. Dersom jeg ikke har oppgitt navn på lege, eller legen min ikke deltar i undersøkelsen, samtykker jeg i at mine resultater sendes til kommunelege I.
3. Jeg samtykker i at jeg kan få tilbud om tilleggsundersøkelser, og i at jeg kan bli kontaktet av lege med tanke på tilbud om behandling eller for å forebygge sykdom.
4. Jeg samtykker i at mine resultater kan brukes til medisinsk forskning, eventuelt ved å sammenholde opplysninger om meg med opplysninger fra andre helse- og sykdomsregistre eller med mine resultater fra tidligere helseundersøkelser i Nord-Trøndelag. Når disse opplysningene sammenholdes, vil mitt navn og personnummer ikke bli tatt med.
5. Jeg samtykker i at blodprøve oppbevares. All bruk av denne vil bare skje etter godkjenning fra Datatilsynet og Regional komité for medisinsk forskningsetikk.

Vennligst stryk det/de avsnitt du reserverer deg mot.

....

Dato **Underskrift**

hunt
Helseundersøkelsen i Nord-Trøndelag

folkehelseinstituttet

Til deg som deltok ved HUNT 2 (1995-1997)

Verdal, april 2002

For noen år siden (1995-97) deltok du i Helseundersøkelsen i Nord-Trøndelag (HUNT), der over 70 000 nord-trøndere deltok. HUNT utgjør i dag en svært verdifull kilde til ny kunnskap om helse og sykdom. Din deltakelse i HUNT er svært viktig for dette arbeidet.

Ved helseundersøkelsen ble det tatt blodprøve av de personene som møtte og som var 20 år eller eldre. En del av blodprøven ble brukt til undersøkelser av din helse, og disse resultatene fikk du tilsendt. Resten av blodprøven ble lagret for å kunne brukes til forskning. Alt dette ble gjort i samsvar med det samtykket du avga ved undersøkelsen.

Blodprøvene kan gi ny kunnskap om årsaker til sykdom

Blodprøvene har stor betydning i arbeidet med å finne årsaker til sykdom. Den senere tid har særlig ett forskningsfelt blitt aktuelt: Undersøkelser på samspillet mellom arv og miljø, spesielt med tanke på å forebygge sykdom. Den teknologiske utviklingen på dette området har gått mye raskere enn vi kunne forutse. Det åpner mulighetene for å undersøke sammenhengen mellom genetiske faktorer og sykdom. Vi ønsker å informere deg om dette og har derfor lagt ved en brosjyre med mer informasjon.

Personvern og godkjenning i etisk komite

Vi vil presisere at all informasjon som er innsamlet i HUNT blir behandlet konfidensielt og i samsvar med regler for personvern. Før forskningen tar til, blir blodprøvene av-identifisert. Det vil si at resultatene som forskeren får, ikke kan knyttes til noen enkeltperson. Alle prosjekter som bruker HUNT-data, uansett hvilke data det er snakk om, må godkjennes av Datatilsynet og av Regional komite for medisinsk forskningsetikk. Godkjenningen gjelder hvilke analyser som skal utføres, hvordan analyseresultatene skal oppbevares og hvordan de skal presenteres for de aktuelle forskergruppene.

Fornyet samtykke?

På baksiden av brevet finner du samtykket som du skrev under da du møtte til HUNT. På grunn av at det ble brukt to versjoner av samtykkeerklæringen, der pkt 5 hadde ulik formulering, vil vi innhente nytt samtykke. Vi spør derfor om du samtykker til at den lagrede blodprøven din fortsatt kan brukes til medisinsk forskning, inkludert analyser av arvestoff og til studier av samspillet mellom arv og miljø. Blodprøven vil ikke bli benyttet i forbindelse med f.eks. kloning, genmodifisering eller andre genteknologiske metoder som er under offentlig debatt.

Dersom du samtykker i at blodprøven din fortsatt kan brukes til medisinsk forskning, skal du ikke sende inn svarslippen. Vi minner likevel om at du når som helst og uten noen begrunnelse kan trekke ditt samtykke tilbake, hvis du senere skulle ønske dette.

Dersom du ikke samtykker i at blodprøven din kan brukes til medisinsk forskning, må du gi oss beskjed. Vi ber deg da skrive under erklæringen nedenfor, klippe av slippen og sende den til oss i den vedlagte konvolutten innen 01.05.02. Porto er betalt.

Svarslippen *(Klipp her)*

Jeg ønsker **ikke** at min blodprøve oppbevares og brukes til medisinsk forskning.
Min blodprøve skal derfor fjernes og destrueres.

Sted og dato Navn

SAMTYKKEERKLÆRINGEN I HUNT

Samtykkeerklæringen som deltakerne i HUNT signerte (1995-97) står inne i rammen:

I brosjyren "Helseundersøkelsen i Nord-Trøndelag – et tilbud til deg" er jeg orientert om helseundersøkelsens formål. Jeg har fått brosjyren "hunt – spesial", som omhandler de spesialundersøkelsene jeg kan få tilbud om. Jeg er kjent med at opplysninger om meg blir behandlet strengt fortrolig og at undersøkelsen er godkjent av Datatilsynet og Regional komite for medisinsk forskningsetikk. Det er ikke satt noen spesiell tidsbegrensning for hvor lenge opplysningene kan lagres, men jeg er klar over at jeg på hvilket som helst tidspunkt kan trekke meg fra undersøkelsen og kan reservere meg mot bruk av opplysninger om meg.

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4. Jeg samtykker i at mine resultater kan brukes til medisinsk forskning, eventuelt ved å sammenholde opplysninger om meg med opplysninger fra andre helse- og sykdomsregistre eller mine resultater fra tidligere helseundersøkelser i Nord-Trøndelag. Når disse opplysningene sammenholdes, vil mitt navn og personnummer ikke bli tatt med.
5. Jeg samtykker i at blodprøve oppbevares. All bruk av denne vil bare skje etter godkjenning fra Datatilsynet og Regional komite for medisinsk forskningsetikk.

For de som deltok i tidsrommet fra august 1995 til juni 1996 var pkt. 5 formulert annerledes:

5. Jeg samtykker i at blodprøve oppbevares. Ved bruk av blodprøven i forbindelse med medisinsk forskning, vil mitt samtykke bli innhentet.

I samråd med bl.a. Datatilsynet ble denne formuleringen altså endret.

De to første punktene i samtykkeerklæringen er ikke lenger aktuelle. Vi spør derfor om du samtykker i at din blodprøve oppbevares og brukes i medisinsk forskning i henhold til samtykkeerklæringen (punkt. 3, 4, 5) inne i rammen. Dersom du samtykker, behøver du ikke å foreta deg noe.

Dersom du ønsker å reservere deg mot at din blodprøve oppbevares i henhold til punkt. 3, 4 og 5 i samtykkeerklæringen, må du gi oss beskjed ved å sende inn slippen på dette brevet innen fristen (se motstående side av arket).

Vennlig hilsen

Geir Stene-Larsen
Nasjonalt folkehelseinstitutt

Jostein Holmen
HUNT forskningssenter, NTNU

HUNT – en oppdatering

- Både ved HUNT 1 (1984-86) og HUNT 2 (1995-97) fikk mange som deltok påvist ulike sykdommer som de har fått behandling for. Det gjelder f.eks. diabetes, høyt blodtrykk, lavt stoffskifte, lungesykdommer og høyt jerninnhold i blodet.
- HUNT har gitt ny kunnskap om forekomst av og årsaker til bl.a. diabetes, hjerte- og karsykdommer, lungelidelser, beinskjørhet, helse hos ungdommer, helse hos eldre, migrene, stoffskiftesykdommer, ufrivillig vannlating, prostatalidelser, og mental helse. Det pågår stadig en betydelig forskningsaktivitet.
- HUNT-data er også tilrettelagt for bruk i helseplanlegging.
- Det medisinske fakultet ved Norges teknisk-naturvitenskapelige universitet (NTNU) har nå HUNT som ett av to satsingsområder. HUNT forskningssenter i Verdal har blitt Nord-Trøndelags første universitetsenhet, og Nord-Trøndelag er plassert på det internasjonale forskningskartet.
- Det planlegges en ny stor helseundersøkelse (HUNT 3). Dersom det kan skaffes tilstrekkelig ressurser, vil HUNT 3 trolig starte i 2004-2005.

Her finner du mer informasjon

På HUNT's nettsider www.hunt.folkehelsa.no finner du løpende informasjon om de siste resultater fra forskningen i HUNT og mye annet HUNT-stoff. Her finnes også mer informasjon om genetikk (arvelighet) og genetisk forskning (arvelighetsforskning), og lenker til ytterligere informasjon.

Har du spørsmål? Kommentarer? Fortell oss hva du mener!

Du kan kontakte oss via e-post, telefon, fax eller brev. På nettsidene våre finner du også en lenke (Ta kontakt!) som gjør det enkelt å sende spørsmål eller si din mening om HUNT.

HUNT forskningssenter
Neptunvn. 1, 7650 VERDAL
Internett: www.hunt.folkehelsa.no
E-post: hunt@medisin.ntnu.no
Telefon: 740 75 192
Telefax: 740 75 181

Ide/layout/trykk: DesignTrykk AS - 74 12 13 32

HUNT - *en kilde til ny kunnskap*

hunt

Helseundersøkelsen i Nord-Trøndelag

HUNT - en kilde til ny kunnskap

Nord-trøndernes oppslutning om HUNT har blitt en viktig kilde til ny medisinsk kunnskap. En rekke internasjonale publikasjoner og rapporter er allerede kommet, og mer enn 70 ulike forskningsprosjekter er i gang (se siste side). HUNT vil være en viktig forskningskilde i mange år framover. Vi arbeider derfor kontinuerlig med å sikre datamaterialet for framtida og hvordan det kan videreutvikles.

Sykdommer og arvelighet

Sykdom oppstår som følge av et samspill mellom arvelige (genetiske) faktorer og miljøfaktorer. For å kunne forebygge sykdom på en mer effektiv måte er det viktig å forstå dette samspillet. Det viser seg at data fra HUNT, deriblant de lagrede blodprøvene, er blant de viktigste kildene vi har for å framskaffe slik kunnskap.

Blodprøvene kan benyttes til å finne årsakene til folkesykdommer som bl.a. hjerteinfarkt, hjerneslag, diabetes, kreft, astma, beinskjørhet og stoffskiftesykdommer. I tiden framover vil det trolig oppstå enda større behov for kunnskap, og HUNT-prøvene kan bidra med viktige svar.

Genetisk forskning - arvelighetsforskning

Hva vil blodprøvene bli brukt til?

Vi ønsker at blodprøvene skal benyttes i prosjekter som undersøker betydningen av ulike risikofaktorer for utvikling av sykdom. Eksempler på slike faktorer er kosthold, røyking, fysisk aktivitet og inneklima. Vi vil undersøke hvordan disse faktorene virker sammen med genene, for å finne ut hvorfor noen blir syke mens andre holder seg friske. I dag vet vi svært lite om dette. Målet for denne type forskning i HUNT er å få økt kunnskap om samspillet mellom arv og miljø.

Denne kunnskapen kan i neste omgang bidra til:

- bedre muligheter til å stille diagnoser og forebygge sykdom
- bedre muligheter til å behandle sykdommer
- bedre muligheter til å skreddersy behandling til den enkelte pasient, slik at den blir mer effektiv og gir færre bivirkninger

Personvern og etikk

All forskning i HUNT skal være anbefalt av Regional komite for medisinsk forskningsetikk. Personvernet er ivaretatt ved at opplysninger med personidentifikasjon oppbevares ved Nasjonalt folkehelseinstitutt (tidl. Statens helseundersøkelser). Rutinene for personvern er strenge og overvåkes av Datatilsynet.

Alle data som brukes i forskning er av-identifiserte, slik at forskeren ikke har tilgang til navn, fødselsdato og personnummer for den enkelte. Dette innebærer at det ikke er aktuelt å gi tilbakemelding til den enkelte om nye analyseresultater fra de lagrede blodprøvene. Utenforstående, f.eks. arbeidsgivere, forsikringsselskaper o.l. får selvsagt heller ikke tilgang på resultatene.

Hvem har tilgang til blodprøvene?

Blodprøvene fra HUNT er i dag oppbevart i egne lokaler på Sykehuset Levanger (biobanken). Prøvene er lagret i frysere som er underlagt sikkerhetskontroll. Det er kun biobankens eget personell som har tilgang til prøvene.

Hvilken rolle skal industrien ha?

Genetisk forskning krever store ressurser. Det er ønskelig at denne typen forskning skal kunne skape virksomhet i Midt-Norge. For å få dette til, kan det være aktuelt å samarbeide med privat industri for å tilføre spisskompetanse, teknologi og kapital. Hvis det blir aktuelt med et samarbeid med private aktører, vil dette være underlagt offentlig regulering og kontroll. I slike tilfeller kan det bli nødvendig å innhente nytt samtykke. Uansett er salg av blodprøver ikke aktuelt.

Den norske Lægeforenings emnekurs i psykiatri for allmennpraktikere
Tema: Vurdering av selvmordsfare i **allmennpraksis ved angst og depresjon.**

Tidsrom: Torsdag 31. august og fredag l. september 1995.
Sted: Jægtvolden Fjordhotell, Inderøy, Nord- Trøndelag
Kursleder: Seksjonsoverlege Nils Håvard Dahl, psyk. poliklinikk, Innherred sykehus

PROGRAM:
Torsdag 31.08.95

0945- 1010: Registrering
1010- 1030: Hvilken betydning har arbeid med selvmordsforebyggende tiltak for arbeidet i SHUS -Statens helseundersøkelse.
Adm. overlege Kjell Bjartveit
1030- 1200: Vurdering av risikofaktorer for selvmord.
Avd. overlege Marit Bjartveit Kriiger, psykiatrisk avdeling, Innherred sykehus
1200-1300: Lunch
1300- 1430: Allmenpraktikerens diagnostisering av depresjon.
Gruppeøvelser med video. Seksjonsoverlege Nils Håvard Dahl
1430-1500: Kaffe
1500 –1700 Behandling av depressive plager
Kognitiv tilnærming *vI* psykolog dr.phil. Tore C. Stiles, Universitetet i Trondheim
MedikamentelI tilnærming *vI* avdelingsoverlege Bystein Stordahl, Namdal Sykehus
17-1730: Beinstrekk
1730- 1900: Samtidig angst og depresjon. Diagnostiske aweininger når pasienten formidler selvmordstanker .
Professor dr.med. Alv A. Dahl, Inst.gruppe for psykiatri, Universitetet i Oslo

0900- 1000: Kva seier allmennpraktikaren til ein psykiatrisk poliklinikk når pasienten ikkje orkar leve lenger?
Kommunelegane Erling Dalen og Arve Strandheim, Levanger, avdelingsoverlege Eystein Stordal, seksjonsoverlege Nils Håvard Dahl,
1000-1030: Kaffe
1030- 1200: Kvalitetssikring av selvmordsvurdering.Bruk av psykometriske metoder i allmenpraksis
Professor dr.med. Alv A. Dahl
1200-1300: Lunch
130O -1345: Evaluering av selvmordsrisiko. Gruppeøvelser med video.
Professor dr.med. Alv A. Dahl, avderlingsoverlege Marit Bjartveit Kn1ger
1345- 1415: Kaffe
1415- 1545: Hva kan allmenpraktikeren gjøre i egen praksis? Presentasjon aven intervensjonsmodell
Professor dr .med. Alv A. Dahl og seksjonsoverlege Nils Håvard Dahl

Ottar Bjerkeset
Folkehelsa, 7650 Verdal
Psykiatrisk klinikk Innherred sykehus, 7600 Levanger

Kommunelege I
(adresse)
……..kommune Verdal 090300

ANGÅENDE PROSJEKTET ”ETTERUNDERSØKELSE AV PSYKIATRISKE RISIKOINDIVIDER IDENTIFISERT VED HUNT”

Et utvalg av de psykiatriske risikoindividene i HUNT II (1995-97), vil nå få tilbud om en etterundersøkelse.
Jeg er stipendiat i prosjektet og vil sammen med to medarbeidere gjennomføre intervjuene på psykiatrisk poliklinikk i Levanger/Namsos og ute i kommunene fra mars/april og ut året.
Alle deltakere har samtykket skriftlig på forspørsel om deltakelse. Risikogruppen scoret over 99 percentil (25 poeng) på selvutfyllingsskjemaet HADS (Hospital Anxiety and Depression rating scale) i HUNT II. Disse fikk skriftlig melding fra Statens helseundersøkelser (SHUS) om høyt angst- og depresjonsnivå og ble tilbudt intervensjon i kommunehelsetjenesten (IDANT-studien). Det var første gang en psykiatrisk masseundersøkelse med tilbud om intervensjon ble gjennomført.

Målsetning med etterundersøkelsen:

- Vi vil undersøke hvordan det har gått med disse risikoindividene, vurdere psykiatrisk status/behandlingsbehov i dag.
- Vurdere effektiviteten og gjennomførbarheten (”feasibility”) av slik intervensjon i en befolkningsundersøkelse, særlig med tanke på samarbeid mellom 1. og 2. linjetjenesten.
- Skaffe mer viten om hvordan folk reagerer på en slik skriftlig melding og hva som avgjør om de deltar eller ikke.

Etterundersøkelsen omfatter ikke noe behandleransvar, men vi sender en meldingsblankett (vedlagt) til fastlege dersom tilstanden er ubehandlet eller ikke kjent og hvis deltakeren ønsker det.

I noen av utkantkommunene kan det bli aktuelt å be om å få låne et kontor/rom til gjennomføring av intervju. Jeg vil selv ta kontakt med de aktuelle legekontorene på forhånd.

Med vennlig hilsen

Ottar Bjerkeset
Lege/stipendiat

IDANT-utvalget (PHRG)

Kjære HUNT-deltaker !

Takk for at du deltok i denne store helseundersøkelsen for noen år siden. Den har gitt oss mye viktig informasjon om hvilke faktorer som øker risiko for sykdom og hvilke som beskytter mot sykdom.

Jeg er lege ved psykiatrisk klinikk Innherred sykehus og skal gjøre en oppfølgings-undersøkelse av de nord-trønderne som rapporterte om mye angst- og/eller depresjon ved den siste HUNT-undersøkelsen (1995-97). Du var en av dem som fikk brev fra Statens helseundersøkelser noen uker etter HUNT, hvor du ble bedt om å ta kontakt med din lege på grunn av slike plager. Det er Statens helseundersøkelser som har tilgang til navnene på den gruppen som fikk meldingen, og dette brevet er derfor sendt av dem.
Hovedmålet er å se hvordan det har gått med deg, og om meldingen du fikk etter HUNT førte til at sykdom ble oppdaget og/eller behandling ble startet eller endret. Det er første gang en slik undersøkelse blir gjort, og vi har ved din hjelp en mulighet til å lære mer om hvordan vi kan oppdage og hjelpe de psykisk lidende i befolkningen. For å være i stand til dette, trenger vi imidlertid oppslutning fra så mange som mulig. Dette gjelder uansett om du fortsatt er syk eller nå føler deg frisk.

Det tar ca 5-7 minutter å fylle ut det vedlagte skjemaet, og jeg ville vært svært takknemmelig om du tok deg tid til dette Det er selvsagt helt frivillig om du vil gjøre dette, dersom du ikke ønsker å delta vil ikke dette få noen konsekvenser for ditt videre forhold til Helsevesenet. Opplysningene du gir vil kun bli brukt i anonymisert statistikk hvor du kan ikke på noen måte kan gjenkjennes. Jeg og de andre som arbeider med studien er pålagt taushetsplikt. Prosjektet er godkjent av Datatilsynet og av den forskningsetiske komiteen i vår helseregion.

På forhånd takk for hjelpen !

Med vennlig hilsen

Ottar Bjerkeset
Lege/forsker

REF- og PRG-utvalget

Kjære HUNT-deltaker !

Takk for at du deltok i denne store helseundersøkelsen for noen år siden. Den har gitt oss mye viktig informasjon om hvilke faktorer som øker risiko for sykdom og hvilke som beskytter mot sykdom.

Jeg er lege ved psykiatrisk klinikk Innherred sykehus og skal gjøre en oppfølgingsundersøkelse av de nord-trønderne som rapporterte mest angst- og depresjonssymptomer ved den siste HUNT-undersøkelsen (1995-97).
Hovedmålet med oppfølgingen er å se hvordan det har gått med disse personene og om helsetilbudet de fikk har hjulpet dem. Det er første gang en slik undersøkelse blir gjort, og vi har med din hjelp en mulighet til å lære mer om hvordan vi kan oppdage og hjelpe de psykisk lidende i befolkningen.
I den forbindelse er det viktig å stille noen av de samme spørsmålene til et tilfeldig utvalg av de andre deltakerne i HUNT. Om lag 1300 HUNT-deltakere vil bli trukket ut til denne gruppen (ofte kalt kontrollgruppe), som du altså er en del av. Det er svært viktig at du fyller ut skjemaet ,enten du føler deg frisk eller har psykiske plager.
Du vil ikke bli innkalt til noe personlig undersøkelse eller kontaktet igjen senere, vi ber bare om at du fyller ut det vedlagte skjemaet.

Det tar ca 5-7 minutter å fylle ut det vedlagte skjemaet, og jeg ville vært svært takknemmelig om du tok deg tid til dette Det er selvsagt helt frivillig om du vil gjøre dette, dersom du ikke ønsker å delta vil ikke dette få noen konsekvenser for ditt videre forhold til Helsevesenet. Opplysningene du gir vil kun bli brukt i anonymisert statistikk hvor du kan ikke på noen måte kan gjenkjennes. Jeg og de andre som arbeider med studien er pålagt taushetsplikt. Prosjektet er godkjent av Datatilsynet og av den forskningsetiske komiteen i vår helseregion.

På forhånd mange takk for hjelpen !

Med vennlig hilsen

Ottar Bjerkeset
Lege/forsker

Intervju-utvalget

Kjære deltaker !

Det er nå få dager til etterundersøkelsen skal finne sted og vi ber deg derfor fylle ut det vedlagte spørreskjemaet og ta det med til intervjuet.

Hvor skal du møte ?

De som skal møte ved psykiatrisk poliklinikk Innherred sykehus (tlf. 74098600) og har time til og med kl. 15.30, melder seg i ekspedisjonen i inngangen til psykiatrisk klinikk. Psykiatrisk klinikk ligger ca 150 meter fra hovedsykehuset mot jernbanen og er et relativt lavt og nytt mursteinsbygg. Lokaltogene stopper rett foran psykiatrisk klinikk. Parkeringsplasser finnes både foran hovedsykehuset og ved inngangen til psykiatrisk klinikk.
Dersom du har time etter kl. 15.30 kan du møte inne til høyre i vestibylen til psykiatrisk sengeavdeling/post 1 (ca 40 m til høyre for hovedinngangen for psykiatrisk klinikk). Den du har avtale med vil komme og møte deg.

Ta med deg denne lappen til timen om du ikke skulle finne oss og må spørre om veien/ringe.

Skyssgodtgjørelse for de som reiser til Levanger vil bli utbetalt rett etter samtalen.

Vel møtt til etterundersøkelsen !

Ottar Bjerkeset Sara Larsson Erling Østnes

MELDESKJEMA TIL PRIMÆRLEGE _____

ANGÅENDE PASIENT_____ FØDT_____

Bakgrunn: Jeg er ansatt ved psykiatrisk klinikk, Innherred sykehus og intervjuet den _____ nevnte pasient i forbindelse med prosjektet "Etterundersøkelse av psykiatriske risikoindivider identifisert ved Helseundersøkelsen i Nord-Trøndelag (HUNT)".

Alle deltakere har samtykket skriftlig på forespørsel om deltakelse. Risikogruppen som nå blir tilbudt etterundersøkelse scoret over 99 percentil (25 poeng) på selvutfyllingsskjemaet HADS (Hospital Anxiety and Depression rating scale) i HUNT II for ca 4 år siden. Disse fikk skriftlig melding fra Statens helseundersøkelser (SHUS) om høyt angst- og depresjonsnivå og ble tilbudt intervensjon i kommunehelsetjenesten (IDANT-studien). Det var første gang en slik psykiatrisk masseundersøkelse med tilbud om intervensjon ble gjennomført.

Målsetning: Vi vil undersøke hvordan det har gått med disse risikoindividene, vurdere psykiatrisk status og behandlingsbehov i dag. Andre viktige spørsmål er hvordan deltakerne reagerte på denne meldingen og hvordan intervensjonen fungerte i praksis.

Denne etterundersøkelsen omfatter ikke noe behandleransvar, men vi sender denne meldingen til fastlege dersom tilstanden er ubehandlet eller ikke kjent og hvis deltakeren ønsker det.

☐ Pasienten bestiller selv time ☐ Vi ber deg kalle inn pasienten

Samtykke til at melding blir sendt:

I diagnostisk screeningintervju (MINI) fikk man positivt svar på følgende diagnose(r) :

……..……

…..……..……..

……
Når det gjelder terapianbefalinger for de aktuelle tilstandene, henvises det til:

Legemiddelhåndboka[1]
SLKs terapiverksteder om angst[2] *og depresjon*[3]
Dahl, Eitinger, Malt & Retterstøl: Lærebok i psykiatri.

Referanser:
1 Norsk legemiddelhåndbok for helsepersonell
2 Farmakoterapi ved angst, Nytt fra Statens legemiddelkontroll 1995, (8)
3 Behandling av depresjon (Terapianbefalinger), Nytt om legemidler fra Statens legemiddelkontroll 1996;(Suppl 1)

Med vennlig hilsen
for lege/stipendiat Ottar Bjerkeset

Inger D. Holbø
førstesekretær

Dissertations at the Faculty of Medicine, NTNU

1977
1. Knut Joachim Berg: EFFECT OF ACETYLSALICYLIC ACID ON RENAL FUNCTION
2. Karl Erik Viken and Arne Ødegaard: STUDIES ON HUMAN MONOCYTES CULTURED *IN VITRO*

1978
3. Karel Bjørn Cyvin: CONGENITAL DISLOCATION OF THE HIP JOINT.
4. Alf O. Brubakk: METHODS FOR STUDYING FLOW DYNAMICS IN THE LEFT VENTRICLE AND THE AORTA IN MAN.

1979
5. Geirmund Unsgaard: CYTOSTATIC AND IMMUNOREGULATORY ABILITIES OF HUMAN BLOOD MONOCYTES CULTURED IN VITRO

1980
6. Størker Jørstad: URAEMIC TOXINS
7. Arne Olav Jenssen: SOME RHEOLOGICAL, CHEMICAL AND STRUCTURAL PROPERTIES OF MUCOID SPUTUM FROM PATIENTS WITH CHRONIC OBSTRUCTIVE BRONCHITIS

1981
8. Jens Hammerstrøm: CYTOSTATIC AND CYTOLYTIC ACTIVITY OF HUMAN MONOCYTES AND EFFUSION MACROPHAGES AGAINST TUMOR CELLS *IN VITRO*

1983
9. Tore Syversen: EFFECTS OF METHYLMERCURY ON RAT BRAIN PROTEIN.
10. Torbjørn Iversen: SQUAMOUS CELL CARCINOMA OF THE VULVA.

1984
11. Tor-Erik Widerøe: ASPECTS OF CONTINUOUS AMBULATORY PERITONEAL DIALYSIS.
12. Anton Hole: ALTERATIONS OF MONOCYTE AND LYMPHOCYTE FUNCTIONS IN REALTION TO SURGERY UNDER EPIDURAL OR GENERAL ANAESTHESIA.
13. Terje Terjesen: FRACTURE HEALING AN STRESS-PROTECTION AFTER METAL PLATE FIXATION AND EXTERNAL FIXATION.
14. Carsten Saunte: CLUSTER HEADACHE SYNDROME.
15. Inggard Lereim: TRAFFIC ACCIDENTS AND THEIR CONSEQUENCES.
16. Bjørn Magne Eggen: STUDIES IN CYTOTOXICITY IN HUMAN ADHERENT MONONUCLEAR BLOOD CELLS.
17. Trond Haug: FACTORS REGULATING BEHAVIORAL EFFECTS OG DRUGS.

1985
18. Sven Erik Gisvold: RESUSCITATION AFTER COMPLETE GLOBAL BRAIN ISCHEMIA.
19. Terje Espevik: THE CYTOSKELETON OF HUMAN MONOCYTES.
20. Lars Bevanger: STUDIES OF THE Ibc (c) PROTEIN ANTIGENS OF GROUP B STREPTOCOCCI.
21. Ole-Jan Iversen: RETROVIRUS-LIKE PARTICLES IN THE PATHOGENESIS OF PSORIASIS.
22. Lasse Eriksen: EVALUATION AND TREATMENT OF ALCOHOL DEPENDENT BEHAVIOUR.
23. Per I. Lundmo: ANDROGEN METABOLISM IN THE PROSTATE.

1986
24. Dagfinn Berntzen: ANALYSIS AND MANAGEMENT OF EXPERIMENTAL AND CLINICAL PAIN.
25. Odd Arnold Kildahl-Andersen: PRODUCTION AND CHARACTERIZATION OF MONOCYTE-DERIVED CYTOTOXIN AND ITS ROLE IN MONOCYTE-MEDIATED CYTOTOXICITY.
26. Ola Dale: VOLATILE ANAESTHETICS.

1987
27. Per Martin Kleveland: STUDIES ON GASTRIN.
28. Audun N. Øksendal: THE CALCIUM PARADOX AND THE HEART.
29. Vilhjalmur R. Finsen: HIP FRACTURES

1988
30. Rigmor Austgulen: TUMOR NECROSIS FACTOR: A MONOCYTE-DERIVED REGULATOR OF CELLULAR GROWTH.
31. Tom-Harald Edna: HEAD INJURIES ADMITTED TO HOSPITAL.
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34. Terje Skjærpe: NONINVASIVE QUANTITATION OF GLOBAL PARAMETERS ON LEFT VENTRICULAR FUNCTION: THE SYSTOLIC PULMONARY ARTERY PRESSURE AND CARDIAC OUTPUT.
35. Eyvind Rødahl: STUDIES OF IMMUNE COMPLEXES AND RETROVIRUS-LIKE ANTIGENS IN PATIENTS WITH ANKYLOSING SPONDYLITIS.
36. Ketil Thorstensen: STUDIES ON THE MECHANISMS OF CELLULAR UPTAKE OF IRON FROM TRANSFERRIN.
37. Anna Midelfart: STUDIES OF THE MECHANISMS OF ION AND FLUID TRANSPORT IN THE BOVINE CORNEA.
38. Eirik Helseth: GROWTH AND PLASMINOGEN ACTIVATOR ACTIVITY OF HUMAN GLIOMAS AND BRAIN METASTASES - WITH SPECIAL REFERENCE TO TRANSFORMING GROWTH FACTOR BETA AND THE EPIDERMAL GROWTH FACTOR RECEPTOR.
39. Petter C. Borchgrevink: MAGNESIUM AND THE ISCHEMIC HEART.
40. Kjell-Arne Rein: THE EFFECT OF EXTRACORPOREAL CIRCULATION ON SUBCUTANEOUS TRANSCAPILLARY FLUID BALANCE.
41. Arne Kristian Sandvik: RAT GASTRIC HISTAMINE.
42. Carl Bredo Dahl: ANIMAL MODELS IN PSYCHIATRY.

1989

43. Torbjørn A. Fredriksen: CERVICOGENIC HEADACHE.
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45. Rolf Salvesen: THE PUPIL IN CLUSTER HEADACHE.
46. Nils Petter Jørgensen: DRUG EXPOSURE IN EARLY PREGNANCY.
47. Johan C. Ræder: PREMEDICATION AND GENERAL ANAESTHESIA IN OUTPATIENT GYNECOLOGICAL SURGERY.
48. M. R. Shalaby: IMMUNOREGULATORY PROPERTIES OF TNF-α AND THE RELATED CYTOKINES.
49. Anders Waage: THE COMPLEX PATTERN OF CYTOKINES IN SEPTIC SHOCK.
50. Bjarne Christian Eriksen: ELECTROSTIMULATION OF THE PELVIC FLOOR IN FEMALE URINARY INCONTINENCE.
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1990

52. Asbjørn Nordby: CELLULAR TOXICITY OF ROENTGEN CONTRAST MEDIA.
53. Kåre E. Tvedt: X-RAY MICROANALYSIS OF BIOLOGICAL MATERIAL.
54. Tore C. Stiles: COGNITIVE VULNERABILITY FACTORS IN THE DEVELOPMENT AND MAINTENANCE OF DEPRESSION.
55. Eva Hofsli: TUMOR NECROSIS FACTOR AND MULTIDRUG RESISTANCE.
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58. Tarjei Rygnestad: DELIBERATE SELF-POISONING IN TRONDHEIM.
59. Arne Z. Henriksen: STUDIES ON CONSERVED ANTIGENIC DOMAINS ON MAJOR OUTER MEMBRANE PROTEINS FROM ENTEROBACTERIA.
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61. Ylva Sahlin: INJURY REGISTRATION, a tool for accident preventive work.
62. Helge Bjørnstad Pettersen: BIOSYNTHESIS OF COMPLEMENT BY HUMAN ALVEOLAR MACROPHAGES WITH SPECIAL REFERENCE TO SARCOIDOSIS.
63. Berit Schei: TRAPPED IN PAINFUL LOVE.
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1991

65. Kåre Bergh: APPLICATIONS OF ANTI-C5a SPECIFIC MONOCLONAL ANTIBODIES FOR THE ASSESSMENT OF COMPLEMENT ACTIVATION.
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68. Trond Sand: THE EFFECTS OF CLICK POLARITY ON BRAINSTEM AUDITORY EVOKED POTENTIALS AMPLITUDE, DISPERSION, AND LATENCY VARIABLES.
69. Kjetil B. Åsbakk: STUDIES OF A PROTEIN FROM PSORIATIC SCALE, PSO P27, WITH RESPECT TO ITS POTENTIAL ROLE IN IMMUNE REACTIONS IN PSORIASIS.

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1992

74. Martin Svartberg: AN INVESTIGATION OF PROCESS AND OUTCOME OF SHORT-TERM PSYCHODYNAMIC PSYCHOTHERAPY.
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81. Eiliv Brenna: REGULATION OF FUNCTION AND GROWTH OF THE OXYNTIC MUCOSA.

1993

82. Gunnar Bovim: CERVICOGENIC HEADACHE.
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89. Anne Vik: VASCULAR GAS EMBOLISM DURING AIR INFUSION AND AFTER DECOMPRESSION IN PIGS.
90. Lars Jacob Stovner: THE CHIARI TYPE I MALFORMATION.
91. Kjell Å. Salvesen: ROUTINE ULTRASONOGRAPHY IN UTERO AND DEVELOPMENT IN CHILDHOOD.

1994

92. Nina-Beate Liabakk: DEVELOPMENT OF IMMUNOASSAYS FOR TNF AND ITS SOLUBLE RECEPTORS.
93. Sverre Helge Torp: *erb*B ONCOGENES IN HUMAN GLIOMAS AND MENINGIOMAS.
94. Olav M. Linaker: MENTAL RETARDATION AND PSYCHIATRY. Past and present.
95. Per Oscar Feet: INCREASED ANTIDEPRESSANT AND ANTIPANIC EFFECT IN COMBINED TREATMENT WITH DIXYRAZINE AND TRICYCLIC ANTIDEPRESSANTS.
96. Stein Olav Samstad: CROSS SECTIONAL FLOW VELOCITY PROFILES FROM TWO-DIMENSIONAL DOPPLER ULTRASOUND: Studies on early mitral blood flow.
97. Bjørn Backe: STUDIES IN ANTENATAL CARE.
98. Gerd Inger Ringdal: QUALITY OF LIFE IN CANCER PATIENTS.
99. Torvid Kiserud: THE DUCTUS VENOSUS IN THE HUMAN FETUS.
100. Hans E. Fjøsne: HORMONAL REGULATION OF PROSTATIC METABOLISM.
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102. Roar Juul: PEPTIDERGIC MECHANISMS IN HUMAN SUBARACHNOID HEMORRHAGE.
103. Unni Syversen: CHROMOGRANIN A. Phsysiological and Clinical Role.

1995

104. Odd Gunnar Brakstad: THERMOSTABLE NUCLEASE AND THE *nuc* GENE IN THE DIAGNOSIS OF *Staphylococcus aureus* INFECTIONS.
105. Terje Engan: NUCLEAR MAGNETIC RESONANCE (NMR) SPECTROSCOPY OF PLASMA IN MALIGNANT DISEASE.
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107. Finn Egil Skjeldestad: INDUCED ABORTION: Timetrends and Determinants.
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109. Arild Faxvaag: STUDIES OF IMMUNE CELL FUNCTION *in mice infected with* MURINE RETROVIRUS.

1996

110. Svend Aakhus: NONINVASIVE COMPUTERIZED ASSESSMENT OF LEFT VENTRICULAR FUNCTION AND SYSTEMIC ARTERIAL PROPERTIES. Methodology and some clinical applications.

111. Klaus-Dieter Bolz: INTRAVASCULAR ULTRASONOGRAPHY.
112. Petter Aadahl: CARDIOVASCULAR EFFECTS OF THORACIC AORTIC CROSS-CLAMPING.
113. Sigurd Steinshamn: CYTOKINE MEDIATORS DURING GRANULOCYTOPENIC INFECTIONS.
114. Hans Stifoss-Hanssen: SEEKING MEANING OR HAPPINESS?
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118. Jan Schjøtt: MYOCARDIAL PROTECTION: Functional and Metabolic Characteristics of Two Endogenous Protective Principles.
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120. Tomm B. Müller: MAGNETIC RESONANCE IMAGING IN FOCAL CEREBRAL ISCHEMIA.
121. Rune Haaverstad: OEDEMA FORMATION OF THE LOWER EXTREMITIES.
122. Magne Børset: THE ROLE OF CYTOKINES IN MULTIPLE MYELOMA, WITH SPECIAL REFERENCE TO HEPATOCYTE GROWTH FACTOR.
123. Geir Smedslund: A THEORETICAL AND EMPIRICAL INVESTIGATION OF SMOKING, STRESS AND DISEASE: RESULTS FROM A POPULATION SURVEY.

1997

124. Torstein Vik: GROWTH, MORBIDITY, AND PSYCHOMOTOR DEVELOPMENT IN INFANTS WHO WERE GROWTH RETARDED *IN UTERO*.
125. Siri Forsmo: ASPECTS AND CONSEQUENCES OF OPPORTUNISTIC SCREENING FOR CERVICAL CANCER. Results based on data from three Norwegian counties.
126. Jon S. Skranes: CEREBRAL MRI AND NEURODEVELOPMENTAL OUTCOME IN VERY LOW BIRTH WEIGHT (VLBW) CHILDREN. A follow-up study of a geographically based year cohort of VLBW children at ages one and six years.
127. Knut Bjørnstad: COMPUTERIZED ECHOCARDIOGRAPHY FOR EVALUTION OF CORONARY ARTERY DISEASE.
128. Grethe Elisabeth Borchgrevink: DIAGNOSIS AND TREATMENT OF WHIPLASH/NECK SPRAIN INJURIES CAUSED BY CAR ACCIDENTS.
129. Tor Elsås: NEUROPEPTIDES AND NITRIC OXIDE SYNTHASE IN OCULAR AUTONOMIC AND SENSORY NERVES.
130. Rolf W. Gråwe: EPIDEMIOLOGICAL AND NEUROPSYCHOLOGICAL PERSPECTIVES ON SCHIZOPHRENIA.
131. Tonje Strømholm: CEREBRAL HAEMODYNAMICS DURING THORACIC AORTIC CROSSCLAMPING. An experimental study in pigs.

1998

132. Martinus Bråten: STUDIES ON SOME PROBLEMS REALTED TO INTRAMEDULLARY NAILING OF FEMORAL FRACTURES.
133. Ståle Nordgård: PROLIFERATIVE ACTIVITY AND DNA CONTENT AS PROGNOSTIC INDICATORS IN ADENOID CYSTIC CARCINOMA OF THE HEAD AND NECK.
134. Egil Lien: SOLUBLE RECEPTORS FOR **TNF** AND **LPS**: RELEASE PATTERN AND POSSIBLE SIGNIFICANCE IN DISEASE.
135. Marit Bjørgaas: HYPOGLYCAEMIA IN CHILDREN WITH DIABETES MELLITUS
136. Frank Skorpen: GENETIC AND FUNCTIONAL ANALYSES OF DNA REPAIR IN HUMAN CELLS.
137. Juan A. Pareja: SUNCT SYNDROME. ON THE CLINICAL PICTURE. ITS DISTINCTION FROM OTHER, SIMILAR HEADACHES.
138. Anders Angelsen: NEUROENDOCRINE CELLS IN HUMAN PROSTATIC CARCINOMAS AND THE PROSTATIC COMPLEX OF RAT, GUINEA PIG, CAT AND DOG.
139. Fabio Antonaci: CHRONIC PAROXYSMAL HEMICRANIA AND HEMICRANIA CONTINUA: TWO DIFFERENT ENTITIES?
140. Sven M. Carlsen: ENDOCRINE AND METABOLIC EFFECTS OF METFORMIN WITH SPECIAL EMPHASIS ON CARDIOVASCULAR RISK FACTORES.

1999

141. Terje A. Murberg: DEPRESSIVE SYMPTOMS AND COPING AMONG PATIENTS WITH CONGESTIVE HEART FAILURE.

142. Harm-Gerd Karl Blaas: THE EMBRYONIC EXAMINATION. Ultrasound studies on the development of the human embryo.
143. Noèmi Becser Andersen:THE CEPHALIC SENSORY NERVES IN UNILATERAL HEADACHES. Anatomical background and neurophysiological evaluation.
144. Eli-Janne Fiskerstrand: LASER TREATMENT OF PORT WINE STAINS. A study of the efficacy and limitations of the pulsed dye laser. Clinical and morfological analyses aimed at improving the therapeutic outcome.
145. Bård Kulseng: A STUDY OF ALGINATE CAPSULE PROPERTIES AND CYTOKINES IN RELATION TO INSULIN DEPENDENT DIABETES MELLITUS.
146. Terje Haug: STRUCTURE AND REGULATION OF THE HUMAN UNG GENE ENCODING URACIL-DNA GLYCOSYLASE.
147. Heidi Brurok: MANGANESE AND THE HEART. A Magic Metal with Diagnostic and Therapeutic Possibilites.
148. Agnes Kathrine Lie: DIAGNOSIS AND PREVALENCE OF HUMAN PAPILLOMAVIRUS INFECTION IN CERVICAL INTRAEPITELIAL NEOPLASIA. Relationship to Cell Cycle Regulatory Proteins and HLA DQBI Genes.
149. Ronald Mårvik: PHARMACOLOGICAL, PHYSIOLOGICAL AND PATHOPHYSIOLOGICAL STUDIES ON ISOLATED STOMACS.
150. Ketil Jarl Holen: THE ROLE OF ULTRASONOGRAPHY IN THE DIAGNOSIS AND TREATMENT OF HIP DYSPLASIA IN NEWBORNS.
151. Irene Hetlevik: THE ROLE OF CLINICAL GUIDELINES IN CARDIOVASCULAR RISK INTERVENTION IN GENERAL PRACTICE.
152. Katarina Tunòn: ULTRASOUND AND PREDICTION OF GESTATIONAL AGE.
153. Johannes Soma: INTERACTION BETWEEN THE LEFT VENTRICLE AND THE SYSTEMIC ARTERIES.
154. Arild Aamodt: DEVELOPMENT AND PRE-CLINICAL EVALUATION OF A CUSTOM-MADE FEMORAL STEM.
155. Agnar Tegnander: DIAGNOSIS AND FOLLOW-UP OF CHILDREN WITH SUSPECTED OR KNOWN HIP DYSPLASIA.
156. Bent Indredavik: STROKE UNIT TREATMENT: SHORT AND LONG-TERM EFFECTS
157. Jolanta Vanagaite Vingen: PHOTOPHOBIA AND PHONOPHOBIA IN PRIMARY HEADACHES

2000

158. Ola Dalsegg Sæther: PATHOPHYSIOLOGY DURING PROXIMAL AORTIC CROSS-CLAMPING CLINICAL AND EXPERIMENTAL STUDIES
159. xxxxxxxxx (blind number)
160. Christina Vogt Isaksen: PRENATAL ULTRASOUND AND POSTMORTEM FINDINGS – A TEN YEAR CORRELATIVE STUDY OF FETUSES AND INFANTS WITH DEVELOPMENTAL ANOMALIES.
161. Holger Seidel: HIGH-DOSE METHOTREXATE THERAPY IN CHILDREN WITH ACUTE LYMPHOCYTIC LEUKEMIA: DOSE, CONCENTRATION, AND EFFECT CONSIDERATIONS.
162. Stein Hallan: IMPLEMENTATION OF MODERN MEDICAL DECISION ANALYSIS INTO CLINICAL DIAGNOSIS AND TREATMENT.
163. Malcolm Sue-Chu: INVASIVE AND NON-INVASIVE STUDIES IN CROSS-COUNTRY SKIERS WITH ASTHMA-LIKE SYMPTOMS.
164. Ole-Lars Brekke: EFFECTS OF ANTIOXIDANTS AND FATTY ACIDS ON TUMOR NECROSIS FACTOR-INDUCED CYTOTOXICITY.
165. Jan Lundbom: AORTOCORONARY BYPASS SURGERY: CLINICAL ASPECTS, COST CONSIDERATIONS AND WORKING ABILITY.
166. John-Anker Zwart: LUMBAR NERVE ROOT COMPRESSION, BIOCHEMICAL AND NEUROPHYSIOLOGICAL ASPECTS.
167. Geir Falck: HYPEROSMOLALITY AND THE HEART.
168. Eirik Skogvoll: CARDIAC ARREST Incidence, Intervention and Outcome.
169. Dalius Bansevicius: SHOULDER-NECK REGION IN CERTAIN HEADACHES AND CHRONIC PAIN SYNDROMES.
170. Bettina Kinge: REFRACTIVE ERRORS AND BIOMETRIC CHANGES AMONG UNIVERSITY STUDENTS IN NORWAY.
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