

Psychosocial work factors and burnout

A study of a working general population and
patients at a stress rehabilitation clinic

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Abstract

Background The psychosocial work environment affects our health (e.g., sick leave and mortality rates). Research on psychosocial work factors and burnout has focused on specific workplaces or occupations and rarely evaluated in the general population or used longitudinal designs. In Sweden, the diagnosis of exhaustion disorder (closely related to burnout) is a common cause for sick leave. The effects of psychosocial work environments on the process of returning to work has not been studied in this specific patient group. The overall aims of this thesis were to (1) assess the level of burnout in a working general population and investigate the importance of psychosocial work factors and sex on burnout, and (2) study reduction of sick leave and experiences of returning to work in burnout patients, with special attention towards psychosocial work factors.

Methods An occupationally active subset (n=1000) of the 2004 Northern Sweden MONICA survey was used in a cross-sectional study. A five-year follow-up of this population was also performed (n=626). Level of burnout was measured using the Shirom Melamed Burnout Questionnaire (SMBQ). Burnout patients were studied for the second thesis aim. A cohort of 117 patients from the REST project was investigated using a baseline questionnaire and sick leave data at two-year follow-up. Grounded Theory was used for an in-depth interview and analysis of 12 employed patients.

Results Cross-sectional results from the working general population showed that women have higher levels of burnout than men. In both sexes, work demands, work control, and job insecurity were associated with burnout levels. Among women, education, socioeconomic position, work object, and working hours were also important. Work factors in combination with situational life factors explained about half the difference in burnout level between women and men. Longitudinal results show that burnout levels decrease with age in both sexes, although the changes occur at an earlier age for men. A constant job strain, increased job insecurity, and a worsened economic situation are related to an increase in burnout level. When studying risk factor accumulation, each additional risk factor exposure increases the burnout level.

In burnout patients, low work control and use of covert coping towards supervisors and workmates predicts unchanged sick leave levels after a two-year period. Borderline significance was found between work overcommitment and reduced sick leave. Both personal resources and external support are described as important factors when regaining the

ability to work. Perceived validation, insights into the situation and adaptive coping skills increase the chance of regaining the ability to work. External support, particularly from the workplace, is also important.

Conclusion There are links between psychosocial work factors and burnout levels in a working general population and sick leave levels in burnout patients. Socioeconomic position and working conditions are important for the level of burnout among working women. In the working population, age differences occur between the sexes; women reduce their burnout levels later in life than men. In the burnout patient population, coping patterns and control at work predict sick leave levels after two years. Both internal resources and external support are important when burnout patients describe the process of regaining the ability to work. The workplace and the work environment are important in preventing working people from becoming burned out and in easing return to work after sick leave. A person's coping pattern is also important in reduction of sick leave.

Abbreviations

AVSI	Availability of Social Integration
BM	Pines Burnout Measure
CBI	Copenhagen Burnout Inventory
CBR	Cognitive Behavioural Rehabilitation
CHD	Coronary Heart Disease
CI	Confidence Interval
D	Somers' D
ED	Exhaustion Disorder
ED-s	self-rating of stress-related Exhaustion Disorder
ERI	Effort Reward Imbalance
ISSI	Interview Schedule for Social Interaction
MBI	Maslach Burnout Inventory
MBI-GS	Maslach Burnout Inventory – General Survey
MONICA	Multinational Monitoring of Trends and Determinants in Cardiovascular Disease
OR	Odds Ratio
PASW	Predictive Analytics Software
REST	Rehabilitation for Stress-related disease and burnout
RTW	Return to work
SD	Standard Deviation
SEI	Socioeconomic Index
SF-36	Short Form 36 item health survey
SMBQ	Shirom Melamed Burnout Questionnaire
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organisation

Enkel sammanfattning på svenska

Den psykosociala arbetsmiljön har visat sig påverka vår hälsa (t.ex. genom sjukskrivnings- och dödstal). Forskning om psykosociala arbetsfaktorer och burnout har mest riktats mot specifika arbetsplatser eller yrken och har sällan haft en longitudinell design. I Sverige används numera diagnosen "Utmattningssyndrom" (nära relaterad till burnout-begreppet), som har blivit en vanlig orsak till sjukskrivning. Vilka effekter den psykosociala arbetsmiljön har på återgång i arbete i denna specifika diagnosgrupp har inte studerats nämnvärt. De övergripande syftena med denna avhandling var att 1) uppskatta nivån av burnout i en arbetande allmän befolkning och undersöka samband mellan arbetsfaktorer, kön och burnout, och 2) studera förändring av sjukskrivning och upplevelsen av återgång i arbete hos patienter med burnout/utmattningssyndrom, med särskild inriktning mot psykosociala arbetsfaktorer.

För att undersöka avhandlingens första syfte studerades en aktivt yrkesarbetande population som ingick i MONICA-studien i norra Sverige 2004 (Multinational Monitoring of Trends and Determinants in Cardiovascular Disease). Dessa personer fyllde i en enkät som låg till grund för en tvärsnittsstudie (artikel I). En uppföljning (artikel II) av samma population gjordes 2009 då en liknande enkät skickades ut. Vid båda tillfällena mättes nivån av burnout med ett frågeformulär, Shirom Melamed Burnout Questionnaire (SMBQ). För att undersöka det andra syftet studerades patienter vid Stressrehabiliteringen på Norrlands Universitetssjukhus. En kohort med 117 patienter från REST-projektet (Rehabilitation for Stress-related Disease and Burnout) fick fylla i en enkät vid början av projektet. Vid samma tidpunkt hämtades sjukskrivningsdata från Försäkringskassan, vilket upprepades två år senare (artikel III). En intervjustudie (artikel IV) på 12 patienter med utmattningssyndrom genomfördes för att få en djupare förståelse av deras syn på arbetsåtergång. Som kvalitativ metod användes Grounded Theory.

Resultat från tvärsnittsstudien visade att arbetande kvinnor i norra Sverige hade signifikant högre burnout-nivå än män. Höga krav på arbetet, låg kontroll på arbetet och otrygg anställning var förenat med hög burnout-nivå hos både män och kvinnor. För kvinnor var även låg utbildning, låg socioekonomisk status (icke-kvalificerad arbetare), arbeten med ting (föremål), samt varierande arbetstider av betydelse. En kombination av arbets- och livsfaktorer kunde förklara ca hälften av könsskillnaden i burnout-nivå. Longitudinella resultat visade att burnout-nivåerna minskade med ökad ålder. Männens nivå av burnout minskade vid tidigare ålder än

hos kvinnorna. En konstant anspänd arbetssituation (höga krav och låg kontroll), upplevd ökande otrygghet i anställningen och en försämrad ekonomisk situation var samtliga relaterade till en ökad burnout-nivå under en femårsperiod. Med varje extra riskfaktor-exponering ökade burnout-nivån ytterligare.

Hos patienter med burnout innebar en upplevd liten möjlighet till kontroll på arbetet och användande av s.k. "dold coping" mot chefer och arbetskamrater en oförändrad sjukskrivningsnivå efter två år. Ett högt arbetsengagemang var förenat med en minskad grad av sjukskrivning. Patienter med utmattningssyndrom som intervjuades beskrev att både egna personliga resurser och externt stöd var viktiga för att de skulle återfå sin förmåga att arbeta. Upplevd bekräftelse, insikter och förmåga till anpassningsbara strategier (coping) ökade möjligheten att återfå förmåga till arbete liksom praktiskt/strukturellt samt emotionellt stöd från chefen.

Dessa resultat visar att psykosociala arbetsfaktorer är av betydelse för burnout-nivå i en allmän arbetande befolkning samt för återgång i arbete efter sjukskrivning på grund av burnout. Socioekonomisk position och arbetsförhållanden är kopplade till burnout-nivå hos arbetande kvinnor. Kvinnor minskade sina nivåer av burnout senare i livet än män. Egna strategier (coping-mönster) och upplevd kontroll på arbetet påverkade fortsatt sjukskrivning hos patienter med burnout. Både interna resurser och externt stöd var viktiga när patienter med utmattningssyndrom beskrev processen att återfå sin förmåga att arbeta. Sammanfattningsvis, så är arbetsplatsen och den psykosociala arbetsmiljön av betydelse för nivån av burnout i den arbetande befolkningen. Dessa faktorer är viktiga att beakta även när patienter med utmattningssyndrom ska återfå arbetsförmåga och kunna återgå i arbete. Personens egna strategier (coping-möster) är också av stor betydelse för att minska sjukskrivningsnivån i denna patientgrupp.

Original papers

This thesis is based on the following papers, which are referred to by their Roman numerals I – IV.

I: Norlund S, Reuterwall C, Höög J, Lindahl B, Janlert U, Slunga Birgander L. Burnout, working conditions and gender – results from the northern Sweden MONICA Study. *BMC Public Health*, 2010, 10:326

II: Norlund S, Reuterwall C, Höög J, Janlert U, Slunga Järvholm L. Work situation and perceived economic situation as predictors of change in burnout – a prospective population based cohort study. Submitted.

III: Norlund S, Reuterwall C, Höög J, Nordin M, Edlund C, Slunga Birgander L. (2010) Work related factors and sick leave after rehabilitation in burnout patients: experiences from the REST-project. *Journal of Occupational Rehabilitation*, 2011, 21(1):23-30.

IV: Norlund S, Fjellman-Wiklund A, Nordin M, Stenlund T, Ahlgren C. Personal resources and support when regaining the ability to work – an interview study with Exhaustion Disorder patients. Manuscript.

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Introduction

Psychosocial work factors can be described as the interaction between the social context and psychological processes occurring in an occupational setting (1). Since the labour market shifted and the physical work environment is more regulated, the quality of the psychosocial work environment is being taken under more consideration. The psychosocial work environment in Sweden had a positive trend during the 1970s and 1980s with increased well-being in the workforce (2). With rising unemployment numbers during the early 1990s a feeling of insecurity affected the labour market and this insecurity continues. Furthermore, the labour market has become internationalized and competition has increased (3). Flexibility is being emphasized and the boundaries between work and family life are less obvious.

The psychosocial work environment affects sick leave levels (4-6) and is associated with mental health (1). In Sweden, half a million people received sickness benefits in 2009 and an additional half a million received sickness compensation. Psychological illness was the most common diagnostic group among those with newly awarded sickness compensation (42%) and also one of the most common causes for receiving sickness benefits (33% in women and 24% in men) (7).

Burnout and Exhaustion disorder

A common psychological illness related to work is burnout. Burnout is a multidimensional phenomenon and the result of chronic strain. When a person is subjected to prolonged stress and does not have time for physical or psychological recuperation, there is a considerable risk that person will burnout. The process of becoming burned out has been described by patients as a process of emotional deprivation (8). The core components are emotional exhaustion, cognitive problems, and physical fatigue (9). However, there is no precise definition of the burnout state (10) and there is still debate whether or not different aspects of burnout exist and, if so, which these dimensions are (11). In 1974, Freudenberger (12) was the first to describe burnout as a concept with physical and emotional symptoms. Initial burnout research focused on burnout symptoms and its occurrence in people-related occupations. In the early 1990s, the research on burnout was extended to other occupations and research measuring burnout became more sophisticated (9).

Table I. Six diagnostic criteria that need to be fulfilled for the diagnosis of Exhaustion Disorder (ED).

1.	Physical and psychological symptoms of exhaustion for at least two weeks. The symptoms must have evolved as the result of one or more identifiable stress factors that have been present for at least six months.
2.	The dominating feature is an evidence of a lack of mental energy. This has been manifested through reduced initiative, a lack of stamina or a prolonged recovery time in relation to mental strain.
3.	At least four of the following symptoms have been present almost every day during a period of two weeks: <ul style="list-style-type: none"> • Concentration or memory problems • Substantially reduced ability to handle demands or execute things under time pressure • Emotional instability or irritability • Sleep problems • Substantial bodily fatigue • Physical symptoms, e.g., pain, palpitations, digestive problems, dizziness or noise sensitivity
4.	The symptoms cause clinically significant suffering or reduce performance at work, socially or in other important aspects of life.
5.	Not dependent on physiological effects from a substance (e.g. medicine or other drugs) or a somatic disease or injury (e.g. hypothyroidism, diabetes, or infectious disease).
6.	Exhaustion Disorder should only be a secondary diagnosis if the criteria for depression, dysthymia, or anxiety disorder are also fulfilled.

Some questionnaires have been constructed to detect and measure burnout. The most well-known are the Maslach Burnout Inventory (MBI) and the MBI-GS (General Survey) (13-14). The latter can be used for all occupations but the MBI is only applicable for people-related occupations. The MBI and the MBI-GS assess three burnout dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment. Other burnout instruments are the Pines Burnout Measure (BM), the Copenhagen Burnout Inventory (CBI) and Shirom Melamed Burnout Questionnaire (SMBQ) (15-17). These instruments can be used to measure burnout level and prevalence. Strong correlations exist between both the BM and the SMBQ and MBI dimension of emotional exhaustion (18-19). The CBI instrument measures exhaustion and fatigue (16).

In Sweden, a diagnosis of Exhaustion Disorder (ED) has been developed and is intimately related to burnout (20). Six criteria need to be fulfilled to meet the diagnosis of ED (Table I). They are comprised of physical/psychological symptoms, degree of severity, and co-morbidity. At least six months of a stressful situation prior to getting sick must have been present. The diagnosis is applied to states that derive from chronic strain and not work-

related stress per se. Within the patient group, the degree of ED can vary from mild to severe. Recovery rate differs and often depends on the severity of the illness. Long-term sick leave is not uncommon. A self-rated instrument that measures Exhaustion disorder (s-ED) was recently developed (21).

There is co-morbidity between burnout and other psychological illnesses. A correlation between burnout and depression exist (22). Burnout is a mediator in the relationship between psychosocial working conditions and depression (23-24). Furthermore, burnout is associated with anxiety (25), sleep problems (26), and physical health, e.g., cardiovascular disease and pain (25, 27). Burnout is suggested to be more common among persons with specific personality traits (28-32).

Psychosocial work factors and burnout

Most studies of burnout have focused on a particular occupational group or a specific work sector. Some studies on general populations and gender-specific populations focused on work and life situational factors (19, 33-34). In addition, a few studies of burnout in general working populations have been conducted (35-37) (Table II). In the studies of general populations and work populations, multiple demographic and life situational factors, e.g., sex, age, marital status and education, were associated with burnout. Associations between work factors and burnout, e.g., work experience and blue-collar work, have also been found. In a working population, low income was associated with mental ill-health (38). Furthermore, high burnout rates have been found in women experiencing financial strain (33).

The demand-control model is one of the most studied psychosocial work models across both physical and psychological health research fields. In studies on psychological health, associations have been found between job demands and control and general psychological well-being, depression and anxiety (1, 39-40). In specific people-related occupations and the human service sector, job demands, and to a lesser degree job control, is associated with burnout (41-43). Some cross-sectional studies in general working populations have found associations between demands and control and burnout (35, 37, 44). Only one longitudinal study in a working population has examined the demand-control model in relation to burnout/exhaustion (36). In this study high demands predict increased burnout risk and in women a low control (decision authority) is also important. Although this study excluded people with physical exhaustion and prior sick leave at baseline (36), it did not control for baseline burnout in the examined cohort.

As mentioned earlier, the labour market is now more unstable and employees have less job security (9). Not only those in temporary employment are affected by job insecurity. There is a suggestion that even stronger associations occur between job insecurity and permanent employees (45). Job insecurity is associated with poorer overall health (46-48). Associations are found between mental ill-health and insecure employment or loss of job security. Some associations have been found between burnout and job insecurity (33, 49). However, as in other studies of the psychosocial work environment, results from a general working population are scarce (36).

Return to work after burnout

Return to work research has identified many different predictors in the process of reducing overall sick leave, presenting a multifaceted phenomenon (50). Individual, work-related and organizational factors can affect return to work (51-52). However, Krause et al. (53) suggest that a combination of quantitative and qualitative research is needed in order to close existing knowledge gaps. In the research on return to work for people with poor mental health, predictors are described as wide ranging (54). Regarding work-related factors and return to work, limited evidence of associations have been found (55). The main predictor of return to work in one study was the severity of the problems (56). However, people on sick leave with self-reported burnout have been found to return faster to work than people with other poor mental health (57). In a systematic review, research on factors that delay return to work was requested (54).

In burnout patients, little is known about reducing sick leave rates and returning to work. Most research regarding return to work in burnout patients have been directed towards different individual interventions. Randomized controlled trials with behavioral therapy interventions have been evaluated finding small or no effects in comparison to the controls (58-60). In a return to work overview from 2010 (61) on interventions and workplace exposures in patients with “mild” mental illness (e.g. burnout and depression), the authors found a surprisingly low number of studies. They were especially astonished over how few studies examined the relationship between stress-related diagnoses and return to work (or sick leave).

Psychosocial work factors

Psychosocial factors have long been acknowledged as an important part of the return to work process (50). However, most interventions have been focused towards individual psychosocial risk factors and not external work

related psychosocial risk factors (62). Psychosocial factors that have been found to hinder return to work are, for example, high physical and emotional demands at work, job insecurity, low meaning of work and low skill discretion (63-65). However, it has been suggested that it is the organizational problems that cause the poor psychosocial climate that needs to be addressed (66). While psychosocial factors have been associated with burnout, no studies have been found examining the impact of psychosocial work factors on returning to work in people on sick leave due to burnout.

Social support and coping

An important part of the psychosocial work climate is the relationships between supervisors and employees and among co-workers. Low social support and work conflicts have been associated with both overall ill-health (67-68) and poor mental health (69-70). In the literature, social support has been found to facilitate the return to work process. Foremost, the relationship between supervisor, co-workers and employee has been in focus (71-73). Janssen et al. (74) found that high supervisory support was more predictive of return to work than job demands and job control in employees on sick leave 6-8 weeks. Supervisory behaviour has also been examined in relation to return to work (75) and supervisors communication skills have been shown to predict return to work in people with mental health problems (76). Supervisory support and work organisation have also been examined, with regards to reduced sick leave levels, through interventions e.g., adjustment latitude (77-78) and other rehabilitation interventions (79-80). Research on the impact of overall social support (including family and friends) on return to work has been inconclusive (81-82). Social support can be seen as a group effort to help reduce stress, a group coping strategy if you will.

To handle stressors we use different coping strategies which can be divided into two categories, problem-focused and emotion-focused coping (83). The first coping category aims to change the stressful situation by collecting information and finding solutions. The second coping category aims to handle the emotions that the stressful situation stirs up. The use of some individual coping strategies has been associated with different illnesses, e.g., myocardial infarction and neck/shoulder pain are associated with the use of covert (hidden) coping (84-85). Coping strategies can also be mediators. For example, Devereaux et al. (86) found that wishful thinking coping mediated the relationship between work demands and burnout. Burnout has been associated with the use of different coping strategies. For example, active and direct action coping have been found to be beneficial (87-89) while self-blame and behavioural disengagement have been related to burnout (62).

Holmgren and Dahlin Ivanoff (90) described the return to work process in women on sick leave due to work related strain. The women felt that they initially lost control over life and then later, through new strategies, regained the control. The use of problem-focused coping strategies e.g. communicating with the employer and to receive social support from work, family, and other professionals helped regaining the control. This qualitative study is the only study found exploring the return to work process in burnout patients.

Aims of the thesis

Overall aims

The overall aim of this thesis was to (1) assess the level of burnout in a working general population and investigate the importance of psychosocial work factors and sex on burnout (2) study reduction of sick leave and experiences of returning to work in burnout patients, with special attention towards psychosocial work factors.

Specific aims

Assess the level of burnout in a representative sample from the actively working population in Northern Sweden and analyse relation to working conditions and sex.

Investigate changes in level of burnout in an occupationally active subset of the general population and identify how such changes relate to changes in psychosocial work situation and self-perceived economic situation.

Study the impact of psychosocial working conditions and coping strategies at work on change in sick leave levels for patients with burnout.

Explore experiences and thoughts on the process of returning to work among employed patients with exhaustion disorder, with a focus on engagement and support.

Methods

Papers I and II are based on a general population, while Papers III-IV are based on patients at a Stress Rehabilitation Clinic. Both quantitative and qualitative methods are represented in the studies. Papers I, II, and III are based on quantitative methods. Paper I is a cross-sectional study and information was collected through a survey. Both Papers II and III are longitudinal studies. Paper II uses information from two surveys with a five-year interval. Paper III is based on a baseline questionnaire and sick leave information collected at baseline and two years later served as the outcome. A qualitative interview-based method called Grounded Theory is used in Paper IV.

Study populations and data collection procedure

Papers I and II – Sample from the Northern Sweden MONICA project

Paper I and II are based on a sample from the Northern Sweden MONICA project. In 1985, two of the most northern counties in Sweden, Norrbotten and Västerbotten, became the Northern Sweden part of the WHO project “Multinational Monitoring Trends and Determinants in Cardiovascular Disease” (MONICA). The primary aim of the MONICA project is to map longitudinal changes in risk, morbidity and mortality of cardiovascular disease (91). The official WHO project ended in the middle of 1990 but the Northern MONICA project was extended and has continued to follow the WHO criteria. A cross-sectional screening sample from the general population was conducted six times (1986, 1990, 1994, 1999, 2004 and 2009). Each time the sample was done using a national database and the selection was independent of participation in earlier screenings. The samples were stratified on sex and age. Sample size, age and survey questions differed slightly between the screening years.

The 2004 Northern Sweden MONICA survey included the Shirom Melamed Burnout Questionnaire (SMBQ). At this time 2500 persons between 25-74 years of age were invited to participate. The survey response was 76%. While this was a general population sample, our interest was the working population. Therefore, some inclusion criteria were incorporated into our study. Included participants were 25-64 years old, occupationally active (not unemployed, on sick leave or students), and answered at least 21 of 22 items in the SMBQ. The final group constituting the study population in Paper I consisted of 1000 adults, 497 women and 503 men (Figure 1).

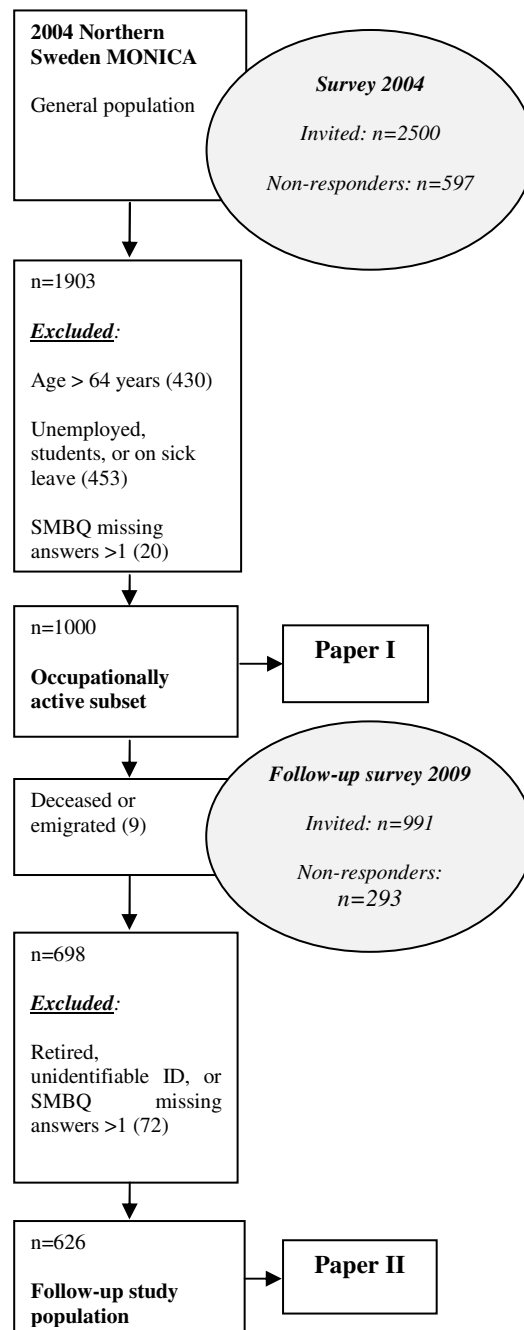
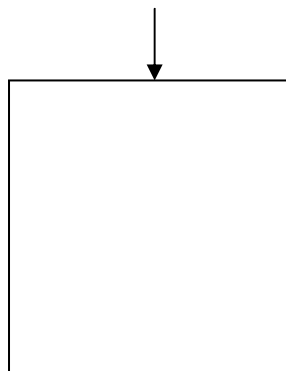


Figure 1. Overview of study populations, data collection and exclusion criteria in Papers I-II.



This 2004 occupationally active subset from the Northern Sweden MONICA survey was followed up with a second survey in 2009. The follow-up was not part of the 2009 Northern Sweden MONICA general population screening or the Northern Sweden MONICA project. However, the questions studied in Paper I were also incorporated into the 2009 follow-up survey. With a national database search for contact information, seven persons were identified as deceased and two persons had moved abroad since the 2004 survey. During the spring of 2009, 991 surveys were sent out together with an informational letter. Three reminders, two postcards and one extra questionnaire, were sent to the subset over the following months. The questionnaire could alternatively be answered on a special internet web site. A total of 698 persons responded with a response rate of 70%. Identification numbers were missing on two surveys and could not be linked to a specific individual. An additional 70 people were excluded because of retirement (63) or more than one missing item on the SMBQ (7). The final study population in Paper II consisted of 626 people (326 women and 300 men).

Paper III – Patients from the REST project

Participants in Paper III were part of the REST (Rehabilitation for Stress-related Disease and Burnout) project. The main aim of the REST project was to examine two different rehabilitation programs for persons with stress-related diagnoses and burnout in a randomized controlled study performed at the Stress Rehabilitation Clinic in Umeå (58). The REST project had three inclusion criteria; the patient had to be 25-55 years old; have had sickness benefit due to burnout (at least 25% sick leave) during the prior 3-24 months; have had a SMBQ value of ≥ 4.6 . The project had exclusion criteria that focused on multiple diagnoses, obstacles to group rehabilitation participation, and inclusion in other intervention studies.

The participants (n=136) filled out an extensive baseline questionnaire and followed one of two possible 1-year group rehabilitation programs. The baseline start time differed for each participant due to a consecutive screening process and sequential start of rehabilitation groups (2003-2006).

Out of the 136 REST project participants, a final subset of 117 was followed in Paper III (Figure 2). In contrast to the REST project an additional inclusion criterion was introduced including employment at baseline (11 persons were unemployed). Four people declined permission to collect sick leave data from the Social Insurance Agency at the time of REST project consent. Four additional people had no sick leave at baseline according to the collected data from the Social Insurance Agency. The time from first recruitment to the last 12-month group follow-up ranged from 2002 to 2007.

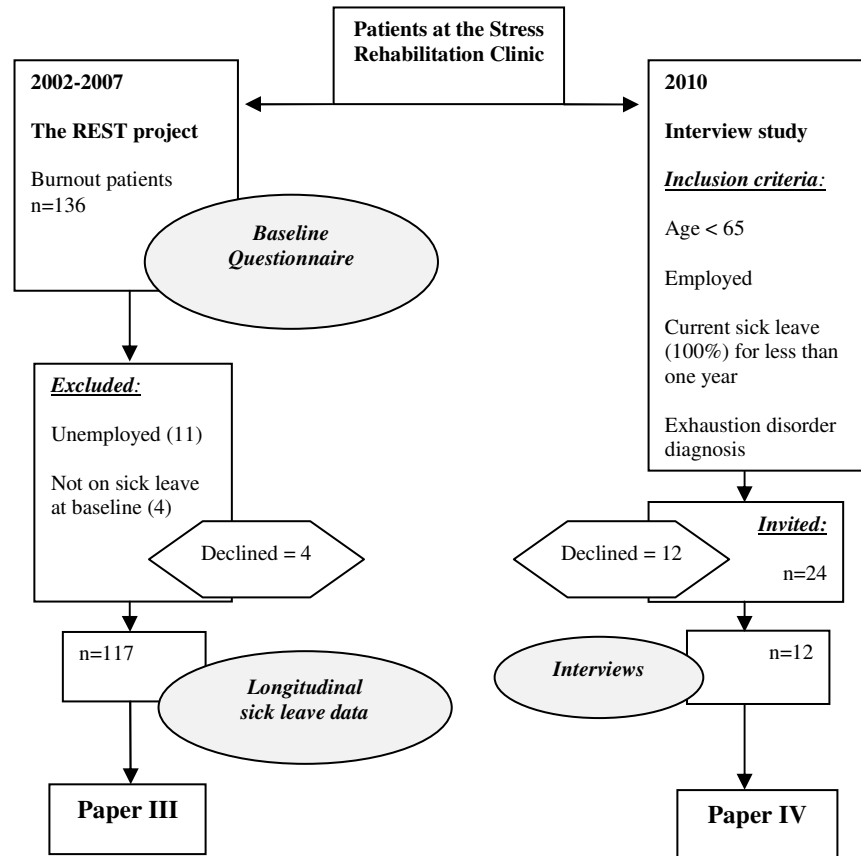


Figure 2. Overview of study populations from the Stress Rehabilitation Clinic, data collections and inclusion/exclusion criteria (Papers III-IV).

Paper IV – Exhaustion disorder patients from the Stress Rehabilitation Clinic

The participants in Paper IV were recruited from the Stress Rehabilitation Clinic at the University Hospital in Umeå. They were either on the waiting list or had just started group Cognitive Behavioural Rehabilitation (CBR). At the Stress Rehabilitation Clinic the patients were medically assessed by a physician and a psychologist. Many patients referred to the clinic have a more severe stress-related diagnosis and they are often on long-term sick leave. These patients could also see a physiotherapist and/or a work rehabilitation consultant during their rehabilitation, if needed.

The study was aimed at working patients. There were inclusion criteria for the interview study. 1) Participants had to be employed, 2) if they were currently on full sick leave, the duration could not have lasted for more than one consecutive year prior to the interview, and 3) they must have a diagnosis of exhaustion disorder. During two periods in 2010, 24 patients were consecutively invited to the study. They received an invitation letter with contact information. After approximately one week they were contacted and received additional information if needed as well as a verbal invitation. Twelve persons (ten women and two men) were included in the study (Figure 2).

One 45-90 minute interview was performed with each participant. The interviews were semi-structured and focus based on the present and/or past work situation and vocational rehabilitation process. The number of interviews was not fixed but stopped when theoretical saturation was reached. This implies that the interview process was stopped when no additional information was retrieved. The interviews were recorded and transcribed verbatim.

Ethical considerations

All projects or studies received ethical approval from the Regional Ethical Review Board in Umeå, Sweden.

- The 2004 Northern Sweden MONICA survey (Paper I): dnr 03-375
- The 2009 follow-up (Paper II): dnr 08-051M
- The REST project (Paper III): Um dnr 02-311
- The interview study (Paper IV): dnr 09-223M

Studied factors

Table III summarizes the outcomes, independent factors, and adjustment factors used in Papers I-III.

Outcome

Burnout (Papers I and II)

In Papers I and II the outcome was burnout and was measured using the Shirom Melamed Burnout Questionnaire (SMBQ) (17). The questionnaire consists of 22 items in the form of statements, e.g. "I feel tired". Each item is answered on a seven point frequency scale and the SMBQ score is equivalent to the average mean score of all 22 items (scale points 1-7). A low score

Table III. Outcomes, independent factors, and adjustment factors in quantitative papers.

Paper	Outcome	Work-related factors	Life situation/ behavioural factors	Adjustment factors
I	Level of burnout (SMBQ)	-Demands at work (PS) -Control at work (PS) -Risk for unemployment (PS) -New job possibilities (PS) -Work object -Socioeconomic index -Working hours -Number of working hours -Physical workload	-Marital status -Living with children -Social integration -Physical activity -Smoking -Self-perceived economic situation -Education	-Age* -Sex*
II	Change in level of burnout (SMBQ)	-Job strain (demands and control at work) (PS) -Risk of unemployment (PS) -New job possibilities (PS)	-Self-perceived economic situation	-Age* -Sex* -Socioeconomic index -Social integration
III	Change in sick leave level	-Demands at work (PS) -Control at work (PS) -Work object -Overtime -Effort reward imbalance (PS)	-Overcommitment -Covert coping at work	-Age -Sex -Rehabilitation program -Education -Sick leave duration

* Served as both independent and adjustment factors in different analyses. SMBQ is the Shirom Melamed Burnout Questionnaire. PS = Psychosocial work factor.

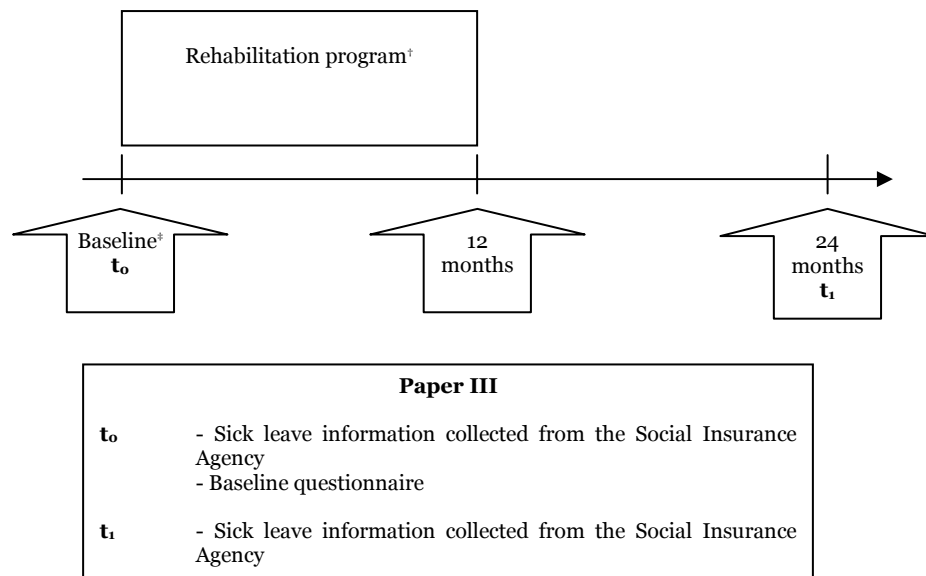
indicates a low burnout level. A single missing answer was allowed in both studies and was replaced with the average mean value of all other respondents on the particular missing item. The expression “SMBQ level” and “burnout level” is used synonymously with SMBQ score.

In Paper I, the SMBQ score was used to estimate cross-sectional burnout levels in the population during 2004. Burnout prevalence was also estimated by sex and age. The SMBQ cut-off point was set at 4.0; scores above the cut-off indicate burnout. The same cut-off point was used when estimating burnout prevalence at the follow-up in 2009.

In Paper II, the change in SMBQ was estimated and used as the outcome. Individual SMBQ scores were measured in 2004 (Northern Sweden MONICA survey) and 2009 (the follow-up survey). The 2009 score minus the 2004 score gave an individual SMBQ change value that was negative if the burnout level decreased (improved). The expression “change in SMBQ level” is used synonymously with “change in burnout level”.

Sick leave (Paper III)

In Paper III, the change in sick leave was of interest. For each individual, sick leave data were collected from the Social Insurance Agency at baseline (t_0) and the 12-month follow-up after completing the rehabilitation (t_1 , 24 months after baseline) (Figure 3). Based on the change in sick leave benefit payments from t_0 to t_1 , two groups were formed - “improved” and “unchanged”. In Sweden, sickness benefits are paid by quarters and in relation to work ability, i.e., 25%, 50%, 75% or 100%. Patients who reduced their sick leave by at least one quarter during the two-year period were labelled “improved”. Those with no changes or increased levels of sick leave were labelled as “unchanged”.



[†] Patients in the REST project attended rehabilitation program A = CBR (Cognitively-oriented behavioral rehabilitation) and Qigong, or rehabilitation program B = Qigong

[‡] Patients in the REST project were assessed as having burnout. A baseline questionnaire was completed.

Figure 3. Measuring points in the sick leave study of the REST project (Paper III).

Work-related factors

Demands and control at work (Papers I, II and III)

The demand-control model was incorporated in Papers I, II, and III. The model measures aspects of respondent self-perceived psychosocial work environment (92). In Papers I and III, two separate dimensions of the model, demands and control (decision latitude) at work, were the focus. In Paper II the combination of high demands and low control, labelled job strain, was studied but the single dimensions were also presented and changes between the two measurement points were of interest. Four different exposure situations were possible: two constant situations (job strain or no job strain) and two changed situations (job strain in 2004 but no job strain in 2009, or vice versa).

The model is based on 11 items, five items measure job demands and six items measure job control. Item answers were made on four-point scales and the sum scores for demand and control items were calculated. The demand sum score was divided at the 75th percentile. All scores above the cut-off point were labelled as “high demands”. The control sum score was divided at the 25th percentile with all scores below the cut-off point labelled as “low control”. To be labelled as having job strain, the person had to have simultaneous labels of “high demands” and “low control”.

In the Northern Sweden MONICA survey, and thus in Papers I and II, two items in the demand dimension differed from the original Swedish version of the demand-control model. These two alternate items were incorporated in the follow-up survey (Paper II) so that the respondents answered the same questions at both measurement points. The alternate questions read “Is your work physically heavy?” and “Is your work psychologically trying?”. The original questions, which were replaced, read; “Do you have to work hard?” and “Does your work demand great effort?”.

Job insecurity (Papers I and II)

Two factors in Papers I and II measured respondent job insecurity, *risk for unemployment* and *new job possibilities*. These factors stemmed from one question each: “Are you at risk of becoming unemployed in the near future?” and “If you lost your job, what would be the chances of getting a new job within a month?”. The answers were dichotomized into high risk and low risk groups. While Paper I presents cross-sectional data, Paper II studies changes in job insecurity between baseline and follow-up.

Work object (Papers I and III)

In Paper I and III the respondent's work objects were studied. Occupations were divided in three categories based on the main work object: working with data (e.g. information technology consultants and administrators); things (e.g. truck drivers and household technicians); or people (e.g. teachers and shop assistants). The classification system was developed by the MOA Research group and the classifications were made using the Nordisk Yrkesklassificering (NYK) (93).

Additional work-related factors

In Paper I, the standard *socioeconomic index* (SEI) for Sweden was used to categorize participant social class. The population was divided into five categories: unskilled blue-collar, skilled blue-collar, low white-collar, middle-high white-collar, and self-employed.

Working hours, *number of work hours*, and *physical workload* were also examined in Paper I. The three alternative answers regarding work hours were; fixed hours, shift work, or varying hours. In the factor measuring the number of work hours, the participants were labelled as part-time workers (1-35 hours a week) or full-time workers (more than 35 hours a week). The factor of physical workload was dichotomized into modest to heavy workload or sedentary to light workload.

In Paper III, exposure to *overtime* work was dichotomized and the cut-off frequency was set at more than once a month. Two other factors from the effort-reward imbalance questionnaire instrument were used, *effort-reward imbalance* (ERI) and work *overcommitment* (see life situation/behavioural factors) (94). ERI is based on 17 statements that measure the difference a person feels between the requested efforts at work and the given rewards, e.g., money and esteem. An index was created based on the answers and high and low ERI groups were formed with the upper quartile serving as the cut-off point.

Life situation/behavioural factors

Marital status and *living with children* are some demographic factors that were taken into account in Paper I. Marital status was dichotomized into married or living with a partner (cohabiting) versus unmarried, divorced or widowed. In regard to the factor of living with children, the population was divided into a yes or no group.

In Paper I, *physical activity* (in the spare-time) was studied. This factor was dichotomized into low physical activity (no physical activity to mostly sedentary) or medium-high (light physical exercise at least 2 times a week to extreme training). Information on smoking habits was also collected.

To investigate respondent social support we used a part of the Interview Schedule of Social Interaction scale (ISSI) called the Availability of Social Integration instrument (AVSI) (95-96). The AVSI instrument investigates the number of people in the respondent's social network (*social integration*). In four questions, e.g. "How many friends can come to your home at anytime and feel at home?", the response alternatives were, none, 1-2, 3-5, 6-10, 11-15, or more than 15. Based on earlier research, having fewer than 3 friends can have a negative mental health impact (97). The respondents in Paper I were labelled as experiencing high or low social integration. Those with high integration answered that they had at least 3-5 friends on all four questions.

Educational level was also incorporated in Paper I. The respondents were dichotomized into those who had attended university or the equivalent and those with a lower educational level.

In Papers I and II, *self-perceived economic situation* was investigated using one question, "How satisfied are you with your economic situation?". In both 2004 and 2009, answers were dichotomized at the lower quartile on a scale from 1 (very dissatisfied) to 7 (very satisfied). Respondents who answered 1-4 were labelled as dissatisfied with the economic situation (answers 5-7 were labelled satisfied). In Paper II, we focused on the change in self-perceived economic situation. Four possible situations were acknowledged: dissatisfied at both measurement points, satisfied at both measurement points, dissatisfied in 2004 but satisfied in 2009, or satisfied in 2004 but dissatisfied in 2009.

In Paper III, work *overcommitment* was measured using six statements about the extent to which the respondent was inclined to commit excessively to work in an effort to receive approval. People with work overcommitment issues are seen as more susceptible to frustration in effort-reward imbalance. The upper tertile of the sum score for the six statements was used to create high and low commitment level groups.

The influence of coping patterns at work was investigated in Paper III. Special attention was paid to those who used covert, or hidden, coping when they were in a conflict or felt unfairly treated at work (98). Use of *covert coping* towards supervisors and workmates was measured with four

statements, respectively. Those who were labelled as using covert coping had the lowest sum scores (below the lowest quartile).

Adjustment factors

Sex and age

Sex and age were included as factors and/or adjustments in all quantitative studies. In Papers I and II the outcome, burnout, was studied in relation to age and sex. Responders were divided into four 10-year age groups. In Paper I, all univariate analyses on work and life situation factors were also age-adjusted and done separately for men and women. In Paper II, sex and age were incorporated as adjustment factors. Sex and age were also incorporated in Paper III as adjustment factors in analyses between sick leave and potential risk factors.

Additional adjustment factors

In Paper II, two additional adjustment factors were used. Respondents were roughly divided into three groups using the *socioeconomic index*: blue-collar, white-collar and self-employed. We also controlled for *social integration* (see life situation/behavioural factors).

In Paper III we controlled for the *rehabilitation program* attended by the participants: Cognitive Behavioural Rehabilitation (CBR) and Qigong or solely Qigong (58). Adjustments were also made for *educational level* and *sick leave duration* before inclusion in the REST study. Education was divided into those who had university education and those who did not. Sick leave duration before inclusion was dichotomized into shorter or longer than 180 days.

Analysis procedures

Statistical analysis

One-way ANOVAs were used in all quantitative studies. In Papers I and II they were used to compare the outcome in different age groups and in Paper III, they were used to compare baseline SMBQ means between the two outcome groups. Because of the continuous outcome variable, linear regression analyses were used in both Papers I and II to study associations between the outcome and independent factors. In Paper I, a stepwise multiple regression model was formed using an automated stepwise method. This was done in order to examine the effect of sex differences. Based on

largest proportion of explained variance, the method chooses the “best” independent factor for the model in a step-by-step manner. In each step all other incorporated factors are taken into account with an inclusion criterion set at $p\text{-value} < 0.05$ and an exclusion criterion set at $p\text{-value} > 0.10$. In both Papers I and II, chi-square tests were used when comparing burnout prevalence (SMBQ ≥ 4.0) in sex and age groups. In Paper III, logistic regression analyses were used when comparing the two possible outcomes in relation to independent factors. Odds ratios (OR) and confidence intervals (CI) were presented. In the same paper, correlations between the significant predictors were investigated by estimating Somers’ D. Somers’ D was used because the predictors were dichotomous. SPSS 14.0 (Paper I and III) or PASW Statistics 18.0 (Paper II) was used for all statistical analyses. The level of significance was set at $\alpha = 0.05$.

Grounded Theory

The data collection and analysis procedure in Paper IV was based on Grounded Theory, an intertwined procedure (99). Data collection and analysis are not seen as separated entities, but instead executed at the same time. All interviews had the same focus but each was influenced by the previous interviews. The method is grounded in empirical data and used to understand the process experienced by the patients. In the analysis process, a group of five researchers from different disciplines read transcripts and discussed the construction of codes and, finally, a theoretical model was constructed.

After the interviews were transcribed, they were coded in the OpenCode software (100). First, all interviews were coded separately. Coding was a thorough procedure where each written line was examined and given a code in close relation to the exact wording of the patient. Codes were also used to describe feelings and underlying meaning of the spoken words. The constant comparative method of analysis was used throughout the study. The codes were compared and the text was, if necessary, recoded to better match the findings. The interviews were collectively read through many times and the codes were compared between interviews. Categories were developed and explanatory patterns were found. In the end, a model was developed that described how the patients experienced their return to work process.

Results

Level of burnout in an occupationally active subset of the general population

When comparing men and women in an occupationally active subset of the general population in Northern Sweden, women had overall higher SMBQ levels (Table IV). However, in the cross-sectional analysis in 2004, burnout levels decreased with age in both sexes. Between 2004 and 2009, a small but statistically significant decline in SMBQ (burnout) levels was found in the whole subset ($-0.15, p < 0.05$). The decline in burnout levels was of the same magnitude in both sexes, and women continued to have higher SMBQs than men. Some interesting age differences were found between the sexes. At the first measurement point, women aged 35-44 were the only ones with a significantly higher SMBQ than men in the same age group. When exploring the differences between the two measurement points (2004 and 2009) we could see that the largest decline in SMBQ for men was in the youngest age group. Meanwhile, the largest reduction in SMBQ level overall was found in women in the second oldest age group (45-54 years of age).

In 2004, the prevalence of burnout was 12.9% in the occupationally active subset of the working population. The SMBQ instrument was used with the cut-off level as 4.0 points. Five years later, the prevalence in the same subset was 13.1% (Table V).

Psychosocial work factors and self-perceived economic situation

In the 2004 cross-sectional study, some psychosocial factors were significantly related to burnout levels in both men and women (Table VI). Experiencing high work demands and low work control were associated with higher SMBQ levels. Furthermore, job insecurity as measured by risk for unemployment was also associated with high burnout levels in both sexes. A low expectation of new job possibilities was only significantly related to high burnout levels in men. In 2004, women who reported being unskilled blue-collar workers had higher SMBQ levels than other women. Furthermore, working with things and varying work hours were also related to higher SMBQ levels among women. Being dissatisfied with one's economic situation was associated with higher burnout levels in both men and women. In a stepwise multiple regression analysis ($R^2 = 0.16$) that included work-related factors and life situational factors, all psychosocial work factors remained significantly related to burnout level. Approximately half of the sex difference in SMBQ level was explained in the model by work-related and

Table IV. Burnout (SMBQ) level related to sex and age in a sample from the working general population in northern Sweden. Results from Papers I and II.

Age in years (2004)	Sex	2004			2009		
		n	SMBQ mean	p-value*	n	SMBQ change	p-value**
25-34	Men	103	2.89	0.08	61	-0.25	0.34
	Women	116	3.10		75	-0.09	
35-44	Men	138	2.77	0.01	81	-0.16	0.54
	Women	130	3.09		88	-0.07	
45-54	Men	145	2.78	0.11	103	-0.14	0.31
	Women	149	2.95		114	-0.29	
55-64	Men	117	2.57	0.14	55	-0.07	0.85
	Women	102	2.75		49	-0.10	
All ages	Men	503	2.75	<0.001	300	-0.15	0.99
	Women	497	2.98		326	-0.15	

SMBQ is the Shirom Melamed Burnout Questionnaire.*p-value for sex differences in 2004SMBQ mean,
** p-value for sex difference in change of SMBQ.

Table V. The distribution of working individuals according to SMBQ-level at the two different occasions (2004 and 2009 respectively).

Year 2009			
Year 2004		SMBQ<4	SMBQ≥4
	SMBQ<4	508 (81%)	44 (7%)
	SMBQ≥4	36 (6%)	38 (6%)
		544	82
			626

SMBQ – Shirom Melamed Burnout Questionnaire

life-situational factors. No interaction effects were found between psychosocial work factors, including self-perceived economic situation, and sex.

At the 2009 follow-up, psychosocial factors of constant job strain (demands and control at work) and increased job insecurity (risk of unemployment), and a worsened self-perceived economic situation were related to increased burnout levels from 2004 until 2009. Only the work demands dimension of

Table VI. Burnout (SMBQ) levels in relation to work-related factors and self-perceived economic situation. Results from Paper I.

	MEN			<i>p</i> -value ^a	WOMEN			<i>p</i> -value ^a
	n	mean	SD		n	mean	SD	
Work object								
With data ^r	128	2.73	0.86		131	2.81	0.85	
With things	236	2.74	0.91	0.92	68	3.28	1.12	0.002
With people	130	2.78	0.94	0.75	296	2.98	0.95	0.17
Socioeconomic index (SEI)								
Blue-collar (unskilled)	103	2.81	0.99	0.23	108	3.29	1.00	<0.001
Blue-collar (skilled)	121	2.76	0.91	0.45	86	2.96	0.92	0.43
White-collar (low)	49	2.91	0.97	0.10	76	2.95	0.95	0.33
White-collar ^r (middle-high)	168	2.67	0.86		199	2.83	0.91	
Self-employed	54	2.73	0.88	0.68	26	3.00	1.06	0.40
Working hours								
Fixed hours ^r	329	2.76	0.92		316	2.89	0.96	
Shift work	59	2.86	0.85	0.67	43	2.98	0.95	0.80
Varying hours	110	2.64	0.88	0.14	136	3.20	1.02	0.001
Demands at work								
Low	359	2.65	0.86		340	2.89	0.93	
High	141	3.02	0.96	<0.001	155	3.19	1.01	0.001
Control at work								
High	396	2.71	0.90		358	2.91	0.92	
Low	105	2.92	0.92	0.03	137	3.18	1.04	0.004
Risk for unemployment								
Low	449	2.72	0.88		431	2.94	0.94	
High	53	3.03	1.06	0.02	63	3.30	1.05	0.004
New job possibilities								
Yes	291	2.63	0.86		276	2.93	0.99	
No	208	2.92	0.95	<0.001	219	3.05	0.92	0.17
Self-perceived economic situation								
Satisfied	377	2.63	0.89		344	2.85	0.93	
Dissatisfied	126	3.10	0.88	<0.001	152	3.29	0.96	<0.001

SMBQ is the Shirom Melamed Burnout Questionnaire. ^r Reference category. ^a Adjusted for age. The *p*-value refers to the mean value. SMBQ score range of 1-7.

the job strain factor was significantly associated with an increased burnout level (Table VII). An accumulation of risk factors (job strain, job insecurity and worsened self-perceived economic situation) corresponded with increasing burnout levels. Respondents with no risk factors had the highest SMBQ decrease while the highest increase was found among those with two or more risk factors.

Table VII. Change in Shirom Melamed Burnout Questionnaire (SMBQ) in relation to risk factor changes from 2004 to 2009. A negative SMBQ change indicates reduced burnout level. Results from Paper II.

Risk factors	n	SMBQ change	p-value*
Job strain			
Constant lack of exposure ^{ref}	530	-0.19	.
Job strain → not exposed	24	-0.02	0.54
Not exposed → job strain	33	-0.10	0.68
Constant job strain	8	0.60	0.01
Demands dimension			
Constant middle-low demands ^{ref}	336	-0.24	.
High demands → middle-low demands	69	-0.43	0.12
Middle-low demands → high demands	92	0.01	0.02
Constant high demands	108	0.12	<0.01
Control dimension			
Constant middle-high control ^{ref}	413	-0.17	.
Low control → middle-high control	57	-0.21	0.56
Middle-high control → low control	62	-0.05	0.44
Constant low control	75	-0.14	0.53
Risk of unemployment			
Constantly at no risk ^{ref}	505	-0.19	.
Risk → no risk	36	-0.37	0.29
No risk → risk	39	0.36	<0.001
Constant risk	23	0.16	0.08
New job possibilities			
Constant higher chances ^{ref}	242	-0.20	.
Lower chances → higher chances	51	-0.44	0.11
Higher chances → lower chances	110	-0.01	0.13
Constant lower chances	208	-0.12	0.46
Self-perceived economic situation			
Constantly satisfied ^{ref}	335	-0.24	.
Dissatisfied → satisfied	71	-0.29	0.86
Satisfied → dissatisfied	121	0.14	<0.001
Constantly dissatisfied	92	-0.07	0.10

^{ref} This category is considered the reference (unexposed) category in the analysis. Overall mean SMBQ change in the cohort was -0.15. *Adjustments for age, sex, socioeconomic index, and social integration.

No differences in SMBQ in 2004 were found between responders and non-responders of the 2009 survey. Both male and female non-respondents were younger than respondents (men: non-responders = median 47 years, respondents = median 52 years, $p < 0.05$; women: non-responders = median 46 years, responders = median 51 years, $p < 0.05$). When analysing female responders and non-responders at the follow-up survey in 2009, some significant differences were detected. More blue-collar workers, a low degree of control, and a higher risk of becoming unemployed were found at baseline

among female non-responders compared to female responders. No differences were found between the male responders and non-responders at the follow-up survey 2009.

Life situational factors

In the 2004 cross-sectional study, some associations were found between SMBQ and factors regarding life situation. In both men and women, low social integration and low physical activity were associated with higher burnout levels. In both men and women, those reporting low social integration had the largest SMBQ mean values compared to all other factor groups (men: $m=3.20$; women: $m=3.38$). Women's educational level was also significant, with higher burnout levels among those who had not attended university.

The process of returning to work after long-term sick leave due to burnout

In the cohort study of burnout patients (employed at baseline), 66 patients (56%) reduced their sick leave by at least 25 percentage points during the two years, i.e., they had "improved". The remaining 51 patients did not change their degree of sick leave (or had increased sick leave, $n=4$) during the same time and formed the "unchanged group". Both unadjusted and adjusted analyses were performed. The adjustment factor of sick leave duration was significantly related to the burnout level and longer sick leave (>180 days) predicted "unchanged" sick leave level. In the "improved" group, the median sick leave duration was 262 days compared to the "unchanged" group with 352 days.

Psychosocial work factors and coping strategies

In the burnout patient cohort, reporting low control at work at baseline significantly predicted having an "unchanged" sick leave level at 12-month follow-up (Table VIII). The OR increased after adjustment for background characteristics. In contrast to the association between high demands at work and increased burnout levels in the working population, demands at work did not predict "unchanged" sick leave levels among burnout patients. After adjustments, use of covert coping towards supervisors and workmates also predicted prolonged unchanged sick leave level. Sex and sick leave duration at baseline were the two most important adjustment factors for ORs changes in covert coping predictors. Work overcommitment was significant in the adjusted analyses. Higher commitment predicted "improved" sick leave levels. Within the whole cohort, covert coping towards workmates correlated

Table VIII. Psychosocial working conditions and coping strategies at work as predictors of risk of unchanged or increased level of sick leave. Results from Paper III.

Predictors	Unadjusted OR (95% CI)	Adjusted OR‡ (95% CI)
Working with people [§]	0.48 (0.23-1.02)	0.46 (0.19-1.12)
High demand	0.56 (0.24-1.31)	0.56 (0.23-1.35)
Low control	2.62 (1.14-6.01)	2.76 (1.10-6.90)
Overtime work more than once a month	1.33 (0.63-2.79)	1.09 (0.48-2.48)
High effort reward imbalance	0.92 (0.39-2.15)	0.81 (0.33-1.98)
High overcommitment	0.55 (0.26-1.18)	0.42 (0.18-0.98)
Use of covert coping towards supervisors	1.86 (0.85-4.05)	2.78 (1.17-6.62)
Use of covert coping towards workmates	1.67 (0.75-3.69)	2.58 (1.05-6.34)

Bold odds ratios (ORs) indicate statistical significance ($p < 0.05$) [‡]Adjusted for sex, age, rehabilitation program, education and sick leave duration at baseline [§]Combined reference category: Working with things or data

with low control at work (D; 0.23; $p < 0.05$) and covert coping toward supervisors (D; 0.70; $p < 0.05$). No correlations were found between covert coping towards supervisors and low control. Women used more covert coping towards workmates than did men ($p < 0.05$). No differences between the sexes were found in the use of covert coping towards supervisors.

In analyses that only included women (there were too few men in the study for separate analyses) low control at work and using covert coping towards supervisors predicted “unchanged” sick leave levels in both unadjusted and adjusted analyses (low control; unadjusted OR = 2.8 [1.1-7.3], adjusted OR = 3.1 [1.0-9.2], covert coping towards supervisors; unadjusted OR = 3.0 [1.2-7.6, adjusted OR = 4.3 [1.5-12.8]). However, using covert coping towards workmates (unadjusted OR=2.2 [0.9-5.8], adjusted OR=2.7 [0.9-7.6]) and overcommitment (unadjusted OR=0.4 [0.2-1.1], adjusted OR=0.4 [0.1-1.2]) were not significantly associated with “unchanged” sick leave level. Women who had an “improved” sick leave level were more likely to be employed in people-related occupations (“Improved” sick leave level [80%] vs “unchanged” sick leave level [64%] $p > 0.05$).

Regaining the ability to work

Patients in the interview study were between 25 and 61 years old, with a median age of 39 years, and all but three had university degrees. Two of the participants worked with production manufacturing while the others had people-related occupations. In terms of sick leave, one person worked full-time, four had a full sickness benefit, and seven had part-time sickness

benefit (25-75%). Of the patients who were on some sick leave, all but one had been on sick leave for more than 60 days.

A model was formed based on the patients' descriptions (Figure 4). Regaining the ability to work was the one core category developed when analysing the patient descriptions about the return to work process. Patients goals were to retrieve at least some of their strengths and be able to function again in an occupational setting. However, they did not expect to function in the same way as before. The patients' internal resources were described as important to achieving this goal. To perceive validation from others, gain insights, and be able to adapt coping skills were key factors. External support was also an important part of the process. The support could be practical/structural as well as emotional. Four different actors were presented: the workplace, health care, social insurance agency, and the union. The supervisor was seen as the most powerful actor in the process, next to the patients themselves. Family and friends were not included in descriptions of return to work support.

Regaining the ability to work was described as a multifactorial process that could change depending on the current situation. The internal resources and external support could also vary during the process. Furthermore, internal resources and external support not only affected the core category, but they also affected each other.

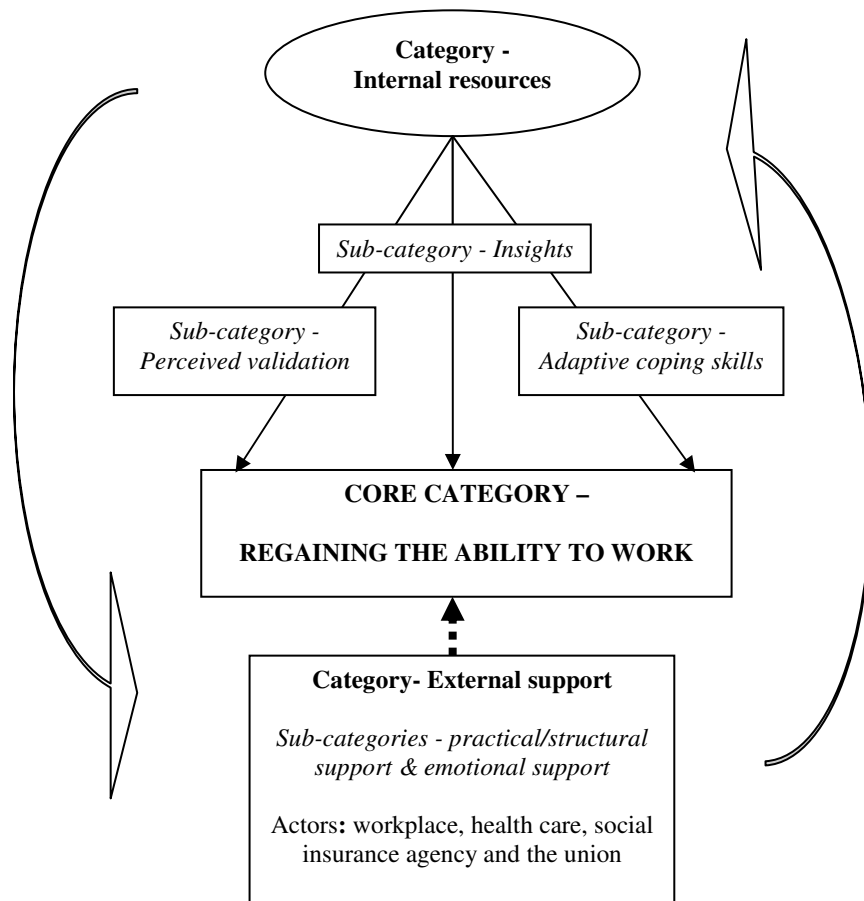


Figure 4. A theoretical model describing the process of regaining the ability to work.

Discussion

In this thesis, both occupationally active persons and patients on sick leave due to burnout were studied. The primary aim was to investigate the importance of psychosocial work factors for the burnout levels in the general working population and the impact these factors had on burnout patients in the process of returning to work.

Job strain was associated with increasing burnout levels, especially the dimension of demands at work, in the working population. Job insecurity and self-perceived economic situation had an impact on increasing burnout levels. In women, additional factors related to socioeconomic situation were significantly associated with burnout level. Control at work, the second dimension of job strain, affected sick leave levels in burnout patients. Furthermore, using covert coping in the workplace increased the risk of having an unchanged sick leave level after two years. Burnout patients described the return to work process as regaining the ability to work. This ability relied foremost on the patients' perceived validation, insights and adaptive coping skills. Support from external actors was also important.

Age and sex differences

In both Papers I and II, we found that burnout levels decreased with age. While the decrease in burnout was most pronounced in the youngest male age group, women had a greater reduction when they reached 50-60 years. Whether and how age affects burnout has been debated in the burnout literature. Some have found increasing burnout with increasing age (34-35) while others have found the opposite (9, 33, 101). In a Finnish study (102) of a working population, age was found to be differentially related to burnout and dependent on sex. In women, the prevalence was curve-shaped with high prevalence among the youngest women but the highest prevalence among the oldest age group (60-64 years). The use of different burnout questionnaires can have an impact on correlations between age and burnout. The MBI-GS (The Maslach Burnout Inventory – General Survey) (14) has been used in most population-based studies and finds positive associations between age and burnout. The SMBQ has been used in studies with the opposite results.

Brewer et al. (103) found small negative correlations between age and emotional exhaustion and between years of experience in an occupational field and emotional exhaustion in a meta-analysis. While experience of life may affect feelings of burnout, the specific experience of a certain occupation

can also have an impact. When a person has time to develop competence and coping resources important for a typical profession, he/she likely feels more secure in that occupational role. The healthy worker effect (104) is important to mention in studies like these, but the impact of the effect on Paper II was likely small. At baseline, the subset included only actively working people and at five-year follow-up, the whole cohort received the questionnaire regardless of employment status.

In Paper I, women reported higher burnout levels than did men, although the sex difference diminished after adjustments for other factors. Another study (35) found that significant sex differences in burnout disappeared when work-related factors and psychological distress were taken into account. The most influential precursors of burnout are suggested to be different for men and women (105). While women are affected by both work and family variables, men are primarily affected by work factors. Our results show that a larger number of the investigated work-related factors affect women than men. However, women younger than 50 years of age had higher burnout levels, and they probably had more daily contact with their immediate family than older women. It is also possible that these women experienced more conflicts between home and work and were doing more unpaid household work, that can be a strain (106-107). Nevertheless, it is important to mention that associations between having children (and marital status) and burnout are small or nonexistent and not a woman's issue per se (33-35). There are also results that show less burnout for employees who were married or parents (108).

Additional work-related factors among women, many of them associated with socioeconomic position, were related to higher burnout levels. High burnout has been found in women with lower education and who work in blue-collar jobs (33). When exploring differences in gender aspects in eight occupations, Innestrand et al. found that some occupations may be more susceptible to burnout than others. When analysing within-gender differences, they found similar patterns for both sexes across occupations. However, the labour market is still largely segregated between the sexes. This was not investigated in that study and the eight selected occupations were almost exclusively people-related. The results in Paper I suggest that thing-related occupations, and not people-related occupations, have the highest burnout levels in women. This was a surprise and is contrary to usual beliefs and the initial focus in burnout research (9). Due to the results in Paper I, one cannot help but wonder whether blue-collar occupations with predominantly female workers are especially susceptible to burnout. However, Hallsten et al. (19) found high burnout rates in women with high socioeconomic status. The highest burnout was found among state officials,

especially teachers. Furthermore, they found some discrepancy between reported burnout levels and long-term sick leave due to stress. It might be possible that there are occupational or workplace differences in sick leave occurrence when employees experience burnout. Maybe some occupations, or workplaces, can handle high burnout levels without it resulting in sick leave, e.g., with work task adjustments.

The impact of psychosocial work factors

The demand-control model was used to study effects on burnout levels in a working population and the reduction of sick leave in burnout patients. In Paper I, a cross-sectional approach found that both job demands and job control were significantly related to burnout level. This is in line with earlier cross-sectional studies (35, 44, 109). However, when examining the change in burnout levels over a five year period (Paper II), demands at work (and not control) had an effect on burnout. Santavirta et al. (43) found stronger relations between high demands and burnout than low control and burnout in a study of teachers. A Danish longitudinal study found significant relations between burnout and demands at baseline but not at three year follow-up (110). However, none of these studies included a general working population. Only one longitudinal study that examines an occupationally active population and the relation between demands and control and burnout has been found (36). The fact that high demands predicted burnout in that study strengthens the probability that demands at work affect burnout levels. This particular study did not control for baseline burnout and that makes the results somewhat uncertain.

Lindeberg et al. (37) found that job strain further increased the risk for burnout. This is in line with Paper II which found the largest SMBQ change in those who had constant job strain. Although job strain, in the way we defined the variable, was significantly associated with increased level of burnout, it may be difficult to use this definition in smaller populations. Those who are defined as experiencing job strain had to be both among the approximately 25% who report high demands and the 25% who report low control. However, defining the variable in this manner increases the probability of correctly labelling job strain.

In contrast to prediction of burnout by demands at work, low control was the only dimension associated with unchanged sick leave rates in burnout patients. No other studies have examined the relationship between demands and control at work and return to work in burnout patients. In studies on other patient groups, control predicts full and partial return to work (74, 111-

112). Demands at work also affect return to work in these studies, but to a lesser extent than control.

Demands at work functions more as a cause of burnout while control at work is more important when returning to work after sick leave. High demands can be perceived as a stressor that increases the feelings of burnout. Low control at work is also a stressor. However, perceived control may buffer stressful situations in the workplace (39). In Paper III, correlations between the use of covert coping towards workmates and low control were found. A higher level of control in the workplace can increase the use of effective coping strategies. In a study of full-time workers, control at work seemed to increase the use of both problem-focused coping and emotion-focused coping (113). In a study of nurses, de Rijk et al. (114) found that active coping moderated the interactions between demands and control. The highest increase in burnout was found in nurses who had low control and used active coping. This means that it is possible that the individual needs to adapt coping strategy to the current work situation.

The use of coping strategies and the importance of social support

In Papers III and IV, coping strategies were important in the return to work process for patients with burnout. People with burnout tend to have lower coping abilities (115) and this reduces the selection of responses. Whether the lower coping abilities are a cause and/or a consequence of burnout is hard to say. No longitudinal studies on that subject were found in the literature. It may be that these people choose the “wrong” coping strategy for a particular stressful situation.

To use covert (hidden) coping primarily towards supervisors, but also workmates, predicted unchanged sick leave at 12-month follow-up. The use of covert coping has been associated with different physical health problems, e.g., coronary heart disease (CHD) (116). Some studies found that a covert coping style was associated to the specific health problem in men, while low levels of open coping were associated to the outcome in women (98, 116). In Paper III, we found that women used more covert coping towards workmates than did men, but also that a covert coping style in women, especially towards the supervisor, implied a very high risk for continued and unchanged sick leave. This suggests an interaction effect between sex and covert coping in relation to sick leave in burnout patients.

No studies have been found that investigated associations between covert coping and mental ill-health. However, the closely linked coping strategy of avoidant coping is associated with burnout (117-118). Although a causal

relationship has been found between avoidant behaviours and burnout, little is known about how such coping strategies affect sick leave durations or return to work among burnout patients. As far as we know, covert coping has not been studied in the context of return to work. In a study of coping and sickness absence, van Rhenen et al. (119) found that an avoidant coping style was related to longer duration of sick leave and reoccurrences of sick leave. Furthermore, in a study on people with long-term sick leave, fear avoidance beliefs reduced the prospects of returning to work after 12 months (120).

In Paper IV, patients describe positive effects of using different coping resources in different situations when regaining the ability to work. Adaptive coping skills may reflect the extent to which a person can anticipate what certain stressful situations require from the individual. This means that insights into how and why a person finds herself/himself in a certain situation are important.

Coping resources are the individual's ability to manage stressful events and depend much on a person's personality disposition. For example, persons with Type D personalities are more likely to use passive coping (121). When a person uses covert or avoidant coping, it is likely that their thoughts and feelings are never heard. It is difficult to help a person when you do not know that they need help. Further, if their coping strategies are hidden, it is hard to know how to help them. Coping resources, as well as personality, are affected by personal history and external circumstances. Theorell et al. (122) highlight that working climate determines the coping strategy to use. For example, when the work environment is authoritatively controlled, employees can feel restrained in their choice of coping strategies. This also suggests that in an open work environment an employee is more likely to use an open coping strategy. This may improve both the work climate and the employees' health. Coping and social support has been found to be closely related to each other (86, 123-124). Social support was associated with burnout level in the cross-sectional population study (Paper I) and is an important factor for regaining the ability to work in burnout patients (Paper IV). The strongest associations in Paper I were between social network (integration) support and burnout levels. This is consistent with earlier research results (125). The impact of specific social support at work was not investigated in Paper I. However, other studies show that low social support at work, from supervisors or co-workers, is associated with poor health and burnout (67-69, 126).

In the process of regaining the ability to work (Paper IV), patients described the support from different professional actors as important. The support was directly important for the process as well as indirectly important by affecting

the patients' internal resources. Patients felt that their supervisor was the most influential actor. Results on overall return to work support this notion (72). In a study by Nieuwenhuijsen et al. (76) of persons with sick leave due to mental ill-health, communication between supervisor and employee was associated with time to return to work. This implies that the supervisor needs to be perceptive and to be in contact with employees even when they are on sick leave. At the same time, it is important to stress that the employees can need different kinds of support that depend on the person and situation (and time) (127-128). Support from other actors, e.g., health care, the social insurance agency and the union, is not to be forgotten (129-130). Especially in situations where the supervisor does not take responsibility for the return to work process or when a person is unemployed or a student, these actors may have a large supporting role.

Methodological considerations

Purvanova et al. (131) examined gender differences in a number of burnout studies. They found that women are more likely to report emotional exhaustion than men, but men report more depersonalization than women. This means that burnout in men resulted more in disengagement than apparent emotional exhaustion. Overall, burnout may be experienced differently by men and women, and this is in line with findings of gender differences in depression (132). The SMBQ instrument was chosen to estimate burnout in the general working population. The instrument has been tested and correlates well with other burnout measures, e.g., the Maslach Burnout Inventory (exhaustion dimension) and the Pines Burnout Measure (BM) (18). However, most burnout instruments measure burnout in relation to work while the SMBQ measures general burnout in life. Depersonalization, as found in the MBI-GS depersonalization dimension, is a more common expression of burnout among men. This may imply that the prevalence of classical work-related burnout among men is underestimated. However, it has been suggested that the depersonalization scale does not fit Scandinavian culture and this makes it problematic to use (16). Furthermore, at follow-up (Paper II), significant differences were found between female responders and non-responders and this carries the risk of under- or overestimating the results.

Use of questionnaires and different instruments to measure psychological well-being in a population can be difficult with regards to differences in answer patterns. In Paper I, the problem of negative affectivity was present. In Paper II, changes in SMBQ level were of interest for comparison of the difference between baseline and follow-up response for each individual. This minimized the problem of negative affectivity.

In Paper III, patients filled in a baseline questionnaire that included questions about their occupation and work environment. These patients had already been on long-term sick leave (3-24 months) and this may have affected their answers. Persons with burnout can experience cognitive problems and those with memory deficits have a problem remembering things. However, if the workplace contributed to the illness, it should have left an impression on the patient. Answers could also have been affected by increased unpleasant feelings about the workplace if it had a greater impact on the patient becoming sick. Nonetheless, patient perceptions, which can differ from the perceptions of others, should be most important in the process of reducing sick leave.

In Papers I and II, we studied a general working population in a cross-sectional manner at baseline and in a longitudinal follow-up. A strength of these studies is that they represent a cross-sectional sample of general occupations and work environments. This is in contrast to most other burnout studies. There were good response rates at baseline and follow-up (>70%). The MONICA survey (baseline questionnaire) was distributed using a stratified approach with the same number of questionnaires sent to men and women and to stratified age groups. Due to the aims of our studies and the structure of the studied factors, unemployed persons and students were not able to be included.

We chose to apply SMBQ as a continuous variable since we wanted to investigate changes along the whole scale, not just the passing of a certain predetermined cut-off. Although a cut-off around 3.75 – 4.0 has been proposed in clinical practice, there is in reality no absolute cut-off on the SMBQ scale which can truly discriminate burnout conditions from normal states. Shifts on the SMBQ scale should also be distinguished from clinical burnout cases or ED (exhaustion disorder) patients, which require additional diagnostic procedures. Using a continuous variable may also be problematic when studying changes in burnout. The participants at the ends of the scale at the first measurement point, could mainly move towards the middle of the scale. There is also a lack of knowledge of the daily variation on the SMBQ scale. However, a high degree of intraindividual variation would probably weaken associations.

The use of both quantitative and qualitative methods for examining factors important for reduction of sick leave (return to work) in burnout patients is a strength of this thesis. The different methods complement each other and increase the understanding of factors crucial for the process of returning to work. All patients in Papers III and IV underwent a clinical examination by a

physician and a psychologist and were assessed as being burned out or having an exhaustion disorder. Although the definitions of burnout are different than that of exhaustion disorder, the symptoms in clinical practice are quite similar. The exhaustion disorder diagnosis was developed by the National Board of Health and Welfare in Sweden after the start of the REST study and could therefore not be used in that particular project (Paper III). The REST patients were evaluated according to the burnout definition given by Schaufeli and Enzmann (133).

The Paper III outcome of sick leave was measured using information collected from the Social Insurance Agency. This was seen as a reliable and objective measure of sick leave rates. However, we do not know whether the included patients actually returned to work after a reduced level of sick leave. Therefore, we chose not to use the return to work concept. During the study period (2002-2007) it is most unlikely that patients were excluded from the social insurance system. With 11 patients accounted for as unemployed at follow-up, we can assume that the majority returned to some kind of activity.

In the qualitative study (Paper IV), twelve patients were interviewed. Although this is a low number of interviews the methodological approach of saturation was applied during the data collection. The interviews worked well as a data collection source and the Grounded Theory method was consistently followed. However, the patients included in the study were somewhat homogeneous. The majority was women who had a university degree and were on long-term sick leave. At the same time, these patients reflect the typical patient group that are referred to burnout rehabilitation programs (58).

The interviews were rigorously analysed by individuals and in a group. The recordings and transcripts were studied and re-studied. Codes were formulated and re-coded. The analyses were done by a group of five persons from different disciplines. To analyse the data in this manner is a triangulation technique to study the phenomena from different angles. The final interpretations of the data were thought to be believable and trustworthy by the authors.

Implications and further research

The psychosocial work environment is important, both in preventing burnout and in reducing sick leave due to burnout. To prevent people from getting burnout we must tackle the problems that result from an insecure labour market. In the psychosocial work environment, demands and job insecurity are especially important to address. However, little is still known

about which occupations are the most vulnerable. People-related occupations have been the focus in burnout research for a long time because of the potential stressful relationship that may occur between professional and client. Our results point in another direction, namely that higher burnout levels occur among women with things-related occupations. According to our results and general population studies on women, blue-collar work is a significant factor for higher burnout levels. This needs to be further investigated.

The gender aspect of burnout needs to be further untangled. We found that psychosocial work factors and the socioeconomic position were important for the burnout level in women. However, sufficient answers have still not been given as to why women experience more burnout (exhaustion) than men. Research is lacking on many aspects of possible explanations of gender differences, such as measurement, methods, diagnostic differences, work environment, or social and cultural differences. The age component is also a factor that should be included in gender analyses.

When examining interventions for return to work in the burnout literature, as well as overall return to work interventions, the external psychosocial work environment has been left out to a large extent. This may be why these interventions show small or no effect. The focus has been on the individual without necessarily looking at the bigger picture. The contexts in which people function is important to address. Rehabilitation interventions should be expanded to include the workplace (134). Doing so might ease the return to work process and make it more effective and permanent. Furthermore, it is crucial that knowledge about what can be done in the work environment reaches the workplaces, e.g., increase control (decision authority) in order to help burnout employees return to work. Workplaces and supervisors need to understand that they play an important role in both preventing and reducing sick leave rates.

We also need to expand our understanding of how social support and coping affect the return to work process. If this is done, effective strategies can be developed that both reduce sick leave rates and improve mental ill-health. Professional actors, e.g., supervisors, health care personnel and the social insurance agency agents, can expand their understanding of the ways they can help individuals on sick leave with these kinds of problems. We also need to investigate whether different approaches are needed depending on the kind of support required by the person on sick leave (128). The individual's coping strategies are vital to discuss in different rehabilitation interventions in order to have swift and lasting recovery. Yet again, the importance of

context needs to be addressed in these interventions while remembering that coping strategies are affected by the environment.

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