REHABILITATION FOR PATIENTS WITH BURNOUT

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Grant me the serenity
To accept the things I cannot change,
Courage to change the things I can,
And the wisdom to know the difference

Reinhold Niebuhr 1926
ABSTRACT

Stress-related diseases and burnout have increased in Sweden during the last decades. In 2006, the most common diagnoses for new cases of sickness compensation were mental and behavioural disorders in both women and men. In spite of the large group of people seeking care for and on long-term sickness absence due to stress-related diseases and burnout, there is no agreement on which treatment they should be offered. The overall aim of this thesis was to describe patients on long-term sick leave because of burnout and to evaluate rehabilitation programs for this patient group.

Two patient samples were recruited from the Stress Clinic at the University Hospital in Umeå, Sweden: REST (Rehabilitation for stress-related disease and burnout; n=136) and QIST (Qigong for stress-related disease and burnout; n=82). A general population sample was from the 2004 Northern Sweden MONICA survey (n=573). Patients in REST were randomised into a 1-year rehabilitation program to either program A (Cognitively-oriented Behavioural Rehabilitation (CBR) and Qigong), or to program B (Qigong alone). In Paper I, baseline data were compared with data from the MONICA sample. In paper II, programs A and B were compared regarding effects on psychological variables and sick leave rates, and in Paper III, 18 patients from program A and B were interviewed to explore subjective experiences of the rehabilitation programs. Patients in QIST were allocated to an intervention with Qigong twice a week for 12 weeks or a control group. Psychological and physical measurements were assessed in QIST.

Data were collected by questionnaires, physical measurements, the register on sick leave, and interviews.

Patients with burnout reported a more restricted social network and higher work demands than the general population. In relation to women from a general population, women with burnout more often worked “with people”, reported high job strain, a more sedentary work situation and less emotional support.

A per-protocol analysis showed no significant differences in treatment effect between program A and B in REST or between the intervention and control group in QIST. All groups improved significantly over time with reduced levels of burnout, anxiety, depression, and fatigue. In REST, lower scores on obsessive-compulsive symptoms, stress behaviour, and sick leave rates were found in both programs and in QIST both groups increased dynamic balance and physical capacity. In an intention-to-treat analysis, patients in program A in REST had significantly fewer obsessive-compulsive symptoms, and larger effect sizes in stress behaviour and obsessive-compulsive symptoms compared to patients in program B. Patients in both REST programs perceived that the 1-year rehabilitation program gave them specific tools to use in secondary prevention. They also emphasised that the good encounters, affirmation and group cohesiveness they perceived during the
rehabilitation was a necessary basis for initiation of a behavioural change leading to recovery.

In conclusion, compared to a general population, patients with burnout perceived more demands at work and less social support. Lack of emotional support seemed to be more associated with burnout among women. There were no differences in effect between CBR and Qigong compared to Qigong alone, or between a 12 week Qigong intervention compared to a control condition. Improvements were found in all groups in the rehabilitation programs. CBR combined with Qigong have some advantages compared to Qigong alone. An environment with good encounters and affirmation of the patients was experiences as important by the patients and group rehabilitation had advantages as recognition and support from the group. Early rehabilitation measures are important to prevent long-term sickness absence. In future rehabilitation programs it might be necessary to have a more individualized approach and choose treatments preferred by the patient.

**Keywords:** Burnout, social support, work demands, population surveillance, epidemiology, randomised controlled trials, cognitive therapy, sick leave, mind-body and relaxation techniques, anxiety, depression, grounded-theory analysis.
SVENSK SAMMANFATTNING

Stressrelaterade sjukdomar och "utbrändhet" har ökat i Sverige de senaste årtionden. Psykiska sjukdomar och syndrom var den största gruppen bland nybeviljade sjukersättningar/aktivitetsersättningar hos både män och kvinnor under 2006. Trots att många söker hjälp för och är sjukkarvna på grund av stressrelaterade sjukdomar och "utbrändhet" finns det ännu ingen samlad evidens om vilken rehabilitering som bör erbjudas. Det övergripande syftet med denna avhandling var att beskriva patienter, som är långtidsjukskrivna på grund av "utbrändhet" samt att utvärdera olika rehabiliteringsprogram för denna patientgrupp.

Två patientgrupper rekryterades från Stresskliniken, Norrlands Universitetssjukhus, Umeå, Sverige; REST (Rehabilitering vid stress och utbrändhet) (n=136) och QIST (Qigong vid stress och utmattningssyndrom) (n=82) samt en grupp ur befolkningen i samma område; 2004 års MONICA-studie i Norra Sverige (n=573).

Patienterna i REST randomiserades till en 1-årig rehabilitering, antingen enligt program A) Kognitivt beteendeanritad rehabilitering (KBR) och Qigong eller program B) enbart Qigong. I studie I jämfördes baslinjedata från REST med MONICA populationen. I studie II jämfördes program A och B med avseende på psykologiska variabler och sjukfrånvaro och i studie III intervjuades 18 patienter från program A och B för att fanga deras upplevelser av den 1-åriga rehabiliteringen. Patienterna i QIST randomiserades till en interventionsgrupp med Qigong två gånger/vecka i 12 veckor eller till en kontrollgrupp. Effekter av Qigong på både psykologiska och fysiska variabler studerades.

Data insamlades med frågeformulär, genom fysiska tester, ur försäkringskassans register över sjukfrånvaro och genom enskilda intervjuer.

I jämförelse med befolkningen rapporterade patienter med "utbrändhet" att de hade ett mera begränsat socialt nätverk och upplevde högre krav i arbetet. Kvinnor med "utbrändhet" arbetade i större utsträckning i mänskirelaterade yrken, upplevde arbetet mer psykiskt belastande, hade ett mera stillasittande arbete och upplevde ett sämre emotionellt stöd jämfört med kvinnor i befolkningen.

I en per-protokoll analys kunde ingen signifikant skillnad i behandlingseffekt påvisas mellan program A och B i REST eller mellan intervention eller kontrollgruppen i QIST. Alla grupper förbättrades över tid med minskade nivåer av utbrändhet, ångest, depression, och trötthet. Dessutom förbättrades båda programmen i REST med minskade nivåer av tvångssymtom, stressbeteende och grad av sjuksvinings och båda grupperna i QIST förbättrades med ökad dynamisk balans och fysisk kapacitet. I en intention-to-treat analys påvisades en signifikant skillnad i REST där patienter i program A hade färre tvångssymtom, samt större effect-size i stressbeteende och tvångssymtom i jämförelse med patienter i program B. Patienterna i båda programmen i REST upplevde att den 1-åriga rehabiliteringen gav dem redskap, som de kunde använda för sitt
tillfrisknande. De poängterade också att det positiva bemötandet och den bekämpande de mötte både av personal och gruppmedlemmar hade stor betydelse för att initiera en beteendeförändring.

Sammanfattningsvis skiljde sig patienter med "utbrändhet" från en befolkningssgrupp genom att de upplevde högre krav i arbetet och lägre socialt stöd. Brist på emotionellt stöd hade större påverkan på kvinnor med "utbrändhet". Ingen skillnad i behandlingseffekt kunde påvisas mellan KBR och Qigong och enbart Qigong, ej heller mellan 12 veckors Qigong jämfört med en kontrollgrupp. Alla grupper i de olika rehabiliteringsprogrammen förbättrades över tid. KBR i kombination med Qigong hade vissa fördelar i jämförelse med enbart Qigong. En miljö med gott bemötande och bekämpande upplevde patienterna som viktig och rehabilitering i grupp hade fördelar som igenkännande och stöd i gruppen. Tidiga rehabiliteringsinsatser är viktiga för att förebygga långtidssjukdom. I framtiden kan det vara viktigt att individualisera rehabiliteringen för att tillgodose patientens behov.
### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AVAT</td>
<td>Availability of Attachment</td>
</tr>
<tr>
<td>AVSI</td>
<td>Availability of Social Integration</td>
</tr>
<tr>
<td>CBI</td>
<td>Copenhagen Burnout Inventory</td>
</tr>
<tr>
<td>CBR</td>
<td>Cognitively-oriented Behavioural Rehabilitation</td>
</tr>
<tr>
<td>CBT</td>
<td>Cognitive Behavioural Therapy</td>
</tr>
<tr>
<td>CIS</td>
<td>Checklist Individual Strength questionnaire</td>
</tr>
<tr>
<td>CPRS-S-A</td>
<td>Self-Rating Scale for Affective Syndromes</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>ELSS</td>
<td>Everyday Life Stress Scale</td>
</tr>
<tr>
<td>HAD</td>
<td>Hospital Anxiety and Depression scale</td>
</tr>
<tr>
<td>HRQL</td>
<td>Health-Related Quality of Life</td>
</tr>
<tr>
<td>ICD-10</td>
<td>International Classification of Diseases, Tenth Revision</td>
</tr>
<tr>
<td>ISSI</td>
<td>Interview Schedule for Social Interaction</td>
</tr>
<tr>
<td>MBI</td>
<td>Maslach Burnout Inventory</td>
</tr>
<tr>
<td>MCS</td>
<td>Mental Component Summary score</td>
</tr>
<tr>
<td>MONICA</td>
<td>Multinational MONItoring of Trends and Determinants in CArdiovascular disease</td>
</tr>
<tr>
<td>OLBI</td>
<td>Oldenburg Burnout Inventory</td>
</tr>
<tr>
<td>PCS</td>
<td>Physical Component Summary score</td>
</tr>
<tr>
<td>QIST</td>
<td>QIgong for Stress-related disease and burnout</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomised Controlled Trials</td>
</tr>
<tr>
<td>REST</td>
<td>REnablement for Stress-related disease and burnout</td>
</tr>
<tr>
<td>SCQ</td>
<td>Self-Concept Questionnaire</td>
</tr>
<tr>
<td>SF-36</td>
<td>Short Form 36 item health survey</td>
</tr>
<tr>
<td>SMBQ</td>
<td>Shirom-Melamed Burnout Questionnaire</td>
</tr>
<tr>
<td>S-PARI</td>
<td>Swedish version of the Physical Assessment Scale</td>
</tr>
<tr>
<td>s-USM</td>
<td>self-reported exhaustion syndrome</td>
</tr>
<tr>
<td>Vo2max</td>
<td>Maximal oxygen uptake</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
This thesis is based on the following papers, which will be referred to by their Roman numerals I-IV:


III  Fjellman-Wiklund A, Stenlund T, Steinholtz K, Ahlgren C. To take charge – Patients’ experiences in a rehabilitation program for burnout. *Manuscript*

IV  Stenlund T, Slunga Birgander L, Lindahl B, Nilsson L, Ahlgren C. The effects of Qigong in patients with burnout: a randomized controlled trial. *Submitted*

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INTRODUCTION

Despite an increasing amount of research and articles on burnout published there is no consensus on how to define burnout, if burnout is work-related, or how burnout should be measured (1).

Prevalence of burnout

The prevalence of burnout has been studied in the general population (2, 3), the working population (2, 4, 5, 6) and in specific workplaces (7-9). In a Swedish population-based study, burnout was measured with Pines Burnout Measure (BM). Burnout was found in 7 % of the general population and in 5.7 % of the individuals who were working (2). Using the Maslach Burnout Inventory- General Survey (MBI-GS), 25.2 % of employees were found to suffer from mild burnout and 2.4 % from severe burnout in a Finnish study (4). Lindblom et al. (5) studied working individuals in Sweden and burnout was measured with the MBI-GS. Burnout groups were created using cut-off points based on the 25th and 75th percentiles for each of the three dimensions. About 19 % of the individuals belonged to a low level group of burnout and about 18 % to a high level group of burnout (5). Another recent study from Sweden consisting of working individuals also measured burnout with MBI-GS, but only used the emotional exhaustion subscale. Individuals who scored higher than the 75th percentile were classified as having emotional exhaustion symptoms. This was found in 15.7 % of the men and 21.8 % of the women (6). Soares et al. (3) found that 21 % of the women in a population study experienced high burnout when burnout was defined as ≥ 4 points on the Shirom-Melamed Burnout Questionnaire (SMBQ).

Prevalence of burnout in human services professionals in the Netherlands was estimated to 3-16 % based on cut-off points of the MBI (7). Of 63 white-collar female employees in Sweden, 43 were allocated to a high level burnout group based on ≥ 3.75 points on the SMBQ (8). Peterson et al. (9) studied burnout in healthcare workers in Sweden. Burnout was measured with the Oldenburg Burnout Inventory (OLBI) and 33.6 % were allocated to have both high exhaustion and high disengagement.

Compared to other occupations on the labour market, burnout is more common in social workers, physicians, nurses and especially among teachers (2, 7). Burnout is reported to be more common among both younger (3, 10, 11) and older workers (5, 11). Some studies reported that having a high level of burnout was associated with being a woman (5, 6, 10, 12). Women have been found to report higher scores on exhaustion and men on cynicism (10, 13). One reason for this could be confounding with occupation because more women work in human services (10, 14). Men who are single seem to experience higher burnout than married men (10, 13). Women who were divorced or single reported higher burnout scores than married women (3).
Definition of burnout

Burnout was first described by Herbert J. Freudenberger (15) in 1974. Freudenberger worked as an unpaid psychiatrist in the alternative health care clinic and described burnout based on his own and other volunteer workers’ experiences. He stated that burnout was accompanied by a feeling of exhaustion and fatigue in combination with different physical symptoms (for example headaches, gastrointestinal disturbances, sleeplessness, and shortness of breath). Burnout people also looked, acted and seemed depressed. Freudenberger also reported that people who were prone to burnout worked too much, too long and too intensely, they had a need to achieve, and often performed monotonous work (15). About the same time, Christina Maslach (16) studied about 200 professionals in the health and social services by collecting questionnaires and performing interviews. She found that the professionals were often unable to cope with emotional stress at work and burnout was a result (16).

Maslach et al. (17) defined burnout as a work-related syndrome consisting of three dimensions that occurred among individuals who work with people: emotional exhaustion, depersonalization, and reduced personal accomplishment. Emotional exhaustion refers to feelings of depleted emotional resources. Depersonalization refers to negative, cynical attitudes about clients. Finally, reduced personal accomplishment refers to a tendency to evaluate one’s own work effort negatively, with feelings of low self-esteem in the work situation.

Pines and Aronson (18) define burnout more broadly as a state of physical, emotional and mental exhaustion caused by long periods in emotionally demanding situations. Burnout is characterized by physical depletion and fatigue, feelings of helplessness and hopelessness, emotional drain, development of negative attitudes to one’s self, work, others and life.

Schaufeli and Enzmann (7) formulated a working definition of burnout that is characterised by the core indicator exhaustion which is accompanied by four general symptoms: distress, a sense of reduced effectiveness, decreased motivation, and dysfunctional attitudes and behaviours at work. Burnout is thought to develop gradually over time in individuals who do not suffer from psychopathology. Schaufeli and Greenglass (14) later defined burnout as a state of physical, emotional and mental exhaustion resulting from long-term involvement in emotionally demanding work situations.

Shirom (19) characterized burnout as a chronic depletion of an individual’s energetic resources, including physical fatigue, emotional exhaustion and cognitive weariness. Burnout is a reaction to long-time exposure to stress at work.

In Sweden, the concept of burnout has been replaced by a new diagnosis called the exhaustion syndrome by the Swedish health care and social welfare system. In 2003, the Swedish National Board of Health and Welfare created diagnostic criteria (20) (Table I) for the exhaustion syndrome (ICD-10, F43.8A) (21) according to ICD and DSM criteria. The
exhaustion syndrome is characterized by mental exhaustion and reduced endurance as a result of identifiable stress factors for at least six months. The stress factors can be identified both in and outside of work situations.

**Table I.** Diagnostic criteria for exhaustion syndrome from the National Board of Health and Welfare in Sweden. All capital letters must be fulfilled for the diagnosis.

A Physical and psychological exhaustion for at least two weeks. The symptoms should be developed as a consequence of one or several stressors during at least six months.

B Evident lack of mental energy in the form of reduced initiative, reduced endurance, or an extended time for recovery after mental stress.

C At least four of the following symptoms almost every day during a two week period:

1. Difficulties with concentration or memory
2. Reduced ability to handle demands or to work with time pressure
3. Emotionally unstable
4. Disturbed sleep
5. Physical weariness
6. Physical symptoms as pain, chest pain, palpitations, digestive complaints, dizziness or sound hypersensitivity

D Symptoms should cause clinical suffering or reduced capacity at work, in social life or in other important respects.

E The condition is not caused by substances or somatic disease.

F If criteria are fulfilled for depressive episode, dysthymia or anxiety disorder, the exhaustion syndrome will be reported as a secondary diagnosis.

**Causes of burnout**

In initial studies, burnout was described as a work-related syndrome in human services and health care (17). Later it was also reported from work beyond human services and in all types of occupations (7, 10, 19). Schaufeli and Taris (22) pointed out that burnout also can be applied to work-like activities such as those of students, artists or volunteers.

High demands, low control and low social support at work are work environment factors that have been associated with burnout (5, 6, 8, 10). There are different theories or models that increase the understanding of the relationship between work-related stress and burnout. Examples of such models are the demand-control model (23), the effort-reward imbalance (ERI) model (24), and the job demands-resources (JD-R) model (25). The demand-control model consists of two dimensions: job decision latitude and psychological demands. A high job strain situation is defined as a high level of psychological demands combined with a low level of decision latitude. Individuals who are exposed to high job strain have an increased risk for psychological strain and mental illness (23, 26, 27). Work-related social support has been added to the demand-control model (28), and further improves the model's ability to predict illness.
The ERI assesses “high cost/low gain” at work and if there is an imbalance between high effort spent and low reward received there will be an increased risk for poor health (24, 27, 29). The JD-R model consists of the two categories: job demands and job resources. An imbalance with high job demands and insufficient job resources implies a stress situation and increases risk of developing burnout (25). Job resources are found to buffer against the burnout risk from high job demands (14, 30). Effects of burnout have also been found in workmates. Female co-workers were torn between a desire to help their workmate and a necessity to manage their own work (31).

There are different views of whether burnout is work-related or not. Evidence shows that burnout can occur outside work in connection with life events like marriage (32) and in mothers of severely ill children (33). Struggling to fulfil responsibilities towards work, family and other peoples are experiences reported by many patients during the time preceding burnout (34). Middle aged women with a double burden of high job strain and a large amount of unpaid work have an increased risk for poor self-reported health (35), and for emotional exhaustion when more time is spent on childcare (36). In comparison with a general population, patients with burnout report a more restricted social network and women report less emotional support (37).

Personality traits have also been identified as important factors for burnout. Low levels of hardiness, an external locus of control, an avoidant or passive coping style, poor self-esteem, a sensitive type, type-A behaviour and neuroticism are qualities suggested to make the individual more sensitive to strain and to psychological distress (10, 19).

Measurements of burnout

The most frequently used measurement in scientific studies on burnout is the Maslach Burnout Inventory (MBI). The MBI assesses the three core dimensions of emotional exhaustion, depersonalization, and reduced personal accomplishment. Three different versions of the MBI are used: MBI-Human Services Survey (MBI-HSS), MBI-Educators Survey (MBI-ES), and MBI- General Survey (MBI-GS) (10, 17).

Pines et al. (38) constructed the Burnout Measure (BM) which is a reliable and reasonably valid instrument and often used as a one-dimensional questionnaire (7). The BM can also be divided in three subscales: demoralisation, exhaustion, and loss of motive. High correlation has been found between the emotional exhaustion subscale of the MBI and the BM three subscales (2).

In this thesis, the Shirom-Melamed Burnout Questionnaire (SMBQ) was used in all papers. The SMBQ contains 22 items, each rated on a 7-point scale. The SMBQ comprises the subscales emotional and physical exhaustion, tension, listlessness, and cognitive weariness. An overall index was computed as the mean of all items. A higher score indicates a higher level of burnout (39-41). The SMBQ has been shown to correlate highly with the emotional exhaustion subscale of the MBI ($r = .77$) and with the BM ($r = .87$) (8).
Introduction

The Oldenburg Burnout Inventory (OLBI) includes the two dimensions exhaustion and disengagement (25). Validity and reliability have been confirmed of the OLBI (42).

The Copenhagen Burnout Inventory (CBI) consists of three sub-dimensions: personal burnout, work-related burnout, and client-related burnout, and can be measured in various domains. The CBI is reported to have acceptable reliability and validity (43).

According to the criteria (20) (Table I) for the exhaustion syndrome (ICD-10, F43.8A) (21) in Sweden a new questionnaire has been constructed called the self-reported exhaustion syndrome (s-USM) (44), that is currently being evaluated.

To summarize, there are many instruments that measure burnout. Many researchers agree that the central aspect of burnout is emotional exhaustion (1, 19, 36), or the two dimensions exhaustion and depersonalization/disengagement (22, 42). The lack of agreement on whether burnout should be regarded as work-related or a general phenomenon remains. Depending on which opinion the researcher uses, different instruments are employed to measure burnout. However, researchers have pointed out the importance of finding a unanimous and clear definition of burnout in order to understand how to measure burnout (1, 45).

Work capacity and burnout

In Sweden mental and behavioural disorders as the cause of new sickness compensations increased from 28 % to 40% between 2002 and 2006. These disorders were also the most common diagnosis in both women and men seeking sickness compensation in 2006 (46). In the Fourth European Working Conditions Survey (2005) 22 % of the EU workers reported fatigue and/or stress symptoms (47). In a 2008 survey on work-related disorders in Sweden, the most common disorders for women were stress or other types of mental strain (10.6 %), followed by strenuous working postures (7.7 %). For men, strenuous working postures were the most common disorders (6.3 %) and stress and other types of mental strain the second common reason (6.1 %) (48).

Rehabilitation

Most research on rehabilitation of individuals suffering from burnout has been done among employees who remain at work. There are randomised controlled trials (RCT) using different measures, e.g. interventions for mindfulness-based stress reduction (49), comparison between cognitive behavioural therapy and yoga (50), web-based stress management (51), and peer-support groups (52), and all shown to have positive effect.

However, there is still insufficient evidence to determine which type of rehabilitation should be offered to patients on sick leave because of burnout. Table II shows an overview of the different RCT for patients on sick leave due to stress-related illness or burnout.
Cognitive behavioural therapy (CBT) is a method commonly used in the treatment of various psychological and psychiatric disorders. Historically, CBT has evolved through three phases. The first phase started in 1920 with the investigation of classic and operant conditioning in animals and humans, i.e. the basics in learning. Based on the principles derived from this research, behaviour therapy (BT) was developed. In 1970 the second phase put cognition in focus and cognitive therapy (CT) was developed by Aaron T. Beck and Albert Ellis. They found that psychological/psychiatric disturbance was a result of both faulty cognition and faulty cognitive processing. Since the early 1980s, BT and CT have been integrated into CBT (53, 54). In a CBT approach the patient is helped or guided toward awareness of thoughts, feelings, the consequent behaviour, and the accompanying physiological response (54). Originally, CBT was performed individually, but group CBT has also been shown effective (55). CBT continues to move forward with new interventions, including dialectical behaviour therapy (DBT), acceptance and commitment therapy (ACT), mindfulness-based stress reduction (MBSR), and mindfulness-based cognitive therapy (MBCT) (54).

Interest in mind-body therapies have increased in the Western world. Traditional Chinese medicine (TCM) consists of several therapies that aim to promote health and healing based on balancing *qi* according to the theory of yin and yang and the five elements (wood, fire, soil, metal, water). Qigong is one therapy originating from TCM and can easily be performed by anyone. The word Qigong is composed of *qi*, the vital energy of the body, and *gong*, the practice or skill of working with *qi* (56). There are several forms and styles of Qigong but the basic components are concentration, relaxation, mind exercises, breathing exercises, body posture, and slow movements. These components could affect and balancing qi. Qigong can also be divided into static/passive and dynamic/active qigong. Static Qigong is mostly performed in sitting or lying posture with focus on an internal body training approach. Dynamic Qigong is mostly performed in a standing position with slow movements (57). RCT have evaluated Qigong for different diagnoses with varying results and also used different control conditions (Table III).
Introduction

Liggande Table II del 1
Introduction

Liggande Table II del 2
Introduction

Liggande Table III del 1
Introduction

Liggande Table III del 2
Aims

AIMS OF THE THESIS

The overall aim of this thesis is to describe patients on long-term sick leave because of burnout and to evaluate rehabilitation programs for this patient group.

Specific aims

- To compare patients with burnout to a general population sample with respect to physical, psychosocial, and work variables. Paper I
- To evaluate gender differences in patients with burnout. Papers I & II.
- To compare two rehabilitation programs, one consisting of Cognitively-oriented Behavioural Rehabilitation (CBR) and Qigong, and another consisting of Qigong alone, with regard to effects on psychological variables and sick leave rates. Paper II.
- To illuminate burnout patients subjective experiences from participating in two rehabilitation programs. Paper III.
- To evaluate the effectiveness of a 12-week Qigong program compared with a control condition. Paper IV.
METHODS

Settings and participants

All participants in this thesis came from the county of Västerbotten, located in the north of Sweden. The population in Västerbotten is nearly 260,000 people and almost half of them (112,000) live in Umeå (the Birch City). The mean age of the population in Umeå is 38 years and about 50% have a higher education. This is due to the presence of Umeå University which in 2007 had almost 29,000 students, 60% of whom were women. The labour market in Umeå is almost equally divided between the public and the private sector.

This thesis is based on three samples. Two patient samples, REST (rehabilitation for stress-related disease and burnout) (Papers I-III) and QIST (Qigong for stress-related disease and burnout) (Paper IV), were recruited from the Stress Clinic at the University Hospital in Umeå. A general population sample was recruited from the 2004 Northern Sweden MONICA survey (Paper I) (Figure 1). Baseline characteristics for the samples in Paper I-IV are summarized in Table IV.

Figure 1. Source of the samples analysed in Papers I-IV. Two patient samples were from the Rehabilitation for stress-related disease and burnout (REST) and Qigong for stress-related disease and burnout (QIST) and one general population sample was from the Multinational Monitoring of Trends and Determinants in Cardiovascular Disease (MONICA) survey.
Methods

Table IV. Baseline characteristics for the study samples used in this thesis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>REST (n=136)</th>
<th>REST (n=18)</th>
<th>QIST (n=82)</th>
<th>MONICA (n=573)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (female/male), n</td>
<td>96/40</td>
<td>10/8</td>
<td>68/14</td>
<td>283/290</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>41.6 (7.4)</td>
<td>42.4 (7.4)</td>
<td>44.3 (9.1)</td>
<td>40.7 (8.5)</td>
</tr>
<tr>
<td>Shirom-Melamed Burnout Questionnaire, mean (SD)</td>
<td>5.7 (0.7)</td>
<td>5.5 (0.6)</td>
<td>5.6 (0.7)</td>
<td>3.1 (1.0)</td>
</tr>
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<td>Education, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/secondary school</td>
<td>68 (50)</td>
<td>13 (72)</td>
<td>41 (50)</td>
<td>360 (64)</td>
</tr>
<tr>
<td>University</td>
<td>68 (50)</td>
<td>5 (28)</td>
<td>41 (50)</td>
<td>202 (36)</td>
</tr>
<tr>
<td>Family situation, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living alone</td>
<td>12 (9)</td>
<td>1 (5.5)</td>
<td>9 (11)</td>
<td>83 (15)</td>
</tr>
<tr>
<td>Living with another adult</td>
<td>20 (15)</td>
<td>1 (5.5)</td>
<td>19 (23)</td>
<td>128 (23)</td>
</tr>
<tr>
<td>Living with another adult and children</td>
<td>87 (64)</td>
<td>12 (67)</td>
<td>45 (55)</td>
<td>302 (55)</td>
</tr>
<tr>
<td>Single parent</td>
<td>17 (12)</td>
<td>4 (22)</td>
<td>9 (11)</td>
<td>38 (7)</td>
</tr>
<tr>
<td>Type of work, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With people</td>
<td>80 (59)</td>
<td>7 (39)</td>
<td>52 (63)</td>
<td>232 (43)</td>
</tr>
<tr>
<td>With things</td>
<td>17 (12)</td>
<td>5 (28)</td>
<td>9 (11)</td>
<td>181 (34)</td>
</tr>
<tr>
<td>With data</td>
<td>39 (29)</td>
<td>6 (33)</td>
<td>21 (26)</td>
<td>126 (23)</td>
</tr>
<tr>
<td>Physical activity, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30 min/day</td>
<td>45 (37)</td>
<td>6 (35)</td>
<td>28 (35)</td>
<td>104 (18)</td>
</tr>
<tr>
<td>≥ 30 min/day</td>
<td>77 (63)</td>
<td>11 (65)</td>
<td>53 (65)</td>
<td>467 (82)</td>
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<tr>
<td>Physical exercise, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 2 hours/week</td>
<td>99 (82)</td>
<td>13 (76)</td>
<td>69 (88)</td>
<td>442 (77)</td>
</tr>
<tr>
<td>&gt; 2 hours/week</td>
<td>21 (18)</td>
<td>4 (24)</td>
<td>9 (12)</td>
<td>129 (23)</td>
</tr>
</tbody>
</table>

Data sources

REST

A total of 259 patients were consecutively screened for participation in the randomised controlled trial, REhabilitation for Stress-related disease and burnout (REST) at the Stress Clinic, University Hospital of Umeå between December 2002 until December 2004. Inclusion criteria for the patients in the REST study were: age 25-55 years; sick leave for burnout ≥ 25% of working hours during the previous 3-24 months; and an average score ≥ 4.6 on the Shirom-Melamed Burnout Questionnaire (SMBQ) (39-41). Exclusion criteria were: other diseases that could result in fatigue and/or stress-related symptoms; other diseases that could be a reason for future sick leave; other diseases or treatments that could interfere with active participation; post-traumatic stress disorders; unemployment for more than two years; known abuse of alcohol or drugs; speech and language difficulties; need for individual therapy; or participation in other intervention studies.

One hundred fifty-eight patients met the inclusion criteria. Of these, 22 patients declined to participate due to a personal reason, long travel distance, or because they had recovered and returned to work. There were no significant differences in age, sex or SMBQ score between patients
who declined and those who participated in the study. The final study sample consisted of 136 patients. In Paper III a sub-sample of 59 patients from REST who had completed the 1-year rehabilitation were asked to participate in an interview study. Seventeen accepted and were interviewed. One patient who had not completed the 1-year rehabilitation was also interviewed. This resulted in a total of 18 patients interviewed. A flowchart of the patients throughout the REST study is presented in Figure 2.
Figure 2. Flowchart of the patients throughout the REST study. In Paper I-II, all 136 patients are analysed. In Paper III, 18 patients are analyzed.
QIST

A total of 290 patients were consecutively screened for participation in the randomised controlled trial, QIgong for Stress-related disease and burnout (QIST), at the Stress Clinic, University Hospital of Umeå between January 2005 and December 2006. Inclusion criteria for the patients in the QIST study were: diagnosis of burnout and exhaustion syndrome according to the Swedish criteria (20); aged 25-65 years; and an average score $\geq 4.0$ on the Shirom-Melamed Burnout Questionnaire (SMBQ) (39-41). Exclusion criteria were known abuse of alcohol or drugs, or participation in other intervention studies.

One hundred twenty-eight patients met the inclusion criteria. Of these, 46 patients declined to participate. There were no significant differences in age, sex or SMBQ score between patients who participated and those who declined. The final study sample consisted of 82 patients. A flowchart of the patients throughout the QIST study is presented in Figure 3.
MONICA

The Multinational MONItoring of Trends and Determinants in CArdiovascular Disease (MONICA) project was initiated in 1982 by the World Health Organization (WHO) to assess trends in cardiovascular mortality in relation to known risk factors. MONICA included 38 populations in 26 countries and the Northern Sweden MONICA survey was included from 1986. The MONICA survey was performed as a repeated cross-sectional survey in 1986, 1990, 1994, 1999, and 2004 in the counties of Västerbotten and Norrbotten (59). In this thesis a sample of 573 participants from Västerbotten County in the 2004 Northern Sweden MONICA survey were used as an age-adjusted reference population (25-55 years).
Methods

Ethical approval

All studies in this thesis were approved by the Research Ethics Committee at the Medical Faculty of Umeå University. All patients received verbal and written information regarding the respective study. The patients were informed that participation was voluntary, they could withdraw at any time without stating a reason, and they were promised confidentiality. The patients who agreed to participate gave written informed consent.

Procedure

REST

Most of the patients in REST were referred to the Stress Clinic by general practitioners. Before inclusion, all patients underwent medical and psychological examination at the Stress Clinic. They also answered a comprehensive questionnaire that was mailed to them before the first visit. Patients who met the inclusion criteria received verbal and written information regarding the study from a research nurse. After baseline assessments the patients were randomised to either program A (Cognitively-oriented Behavioural Rehabilitation (CBR) and Qigong) or program B (Qigong alone). The randomisation procedure was performed by a research nurse who opened opaque sealed envelopes. In total, 10 groups participated in program A and seven groups in program B. In Paper I, baseline data were compared with data from the MONICA sample. In Paper II, patients in program A and B were compared at baseline, after six months and at the end of the 1-year rehabilitation as well as at six and 12 month follow-ups after the 1-year rehabilitation. At the end of the 1-year rehabilitation program patients from nine groups were asked to participate in an interview study (Paper III) with the purpose of assessing their experiences in the programs. The goal was to interview two patients in each group. In five groups more than two patients volunteered and participation was decided by drawing lots. One patient who had withdrawn from the study was also interviewed. All interviews were performed at the Stress Clinic by two interviewers who were not involved in the rehabilitation program.

QIST

Most of the patients in QIST were referred to the Stress Clinic by general practitioners. Before inclusion, all patients underwent medical and psychological examination at the Stress Clinic. The patients received verbal and written information regarding the study if they met the inclusion criteria. Patients who agreed to participate in the study were randomly allocated to either an intervention group (Qigong twice a week during 12 weeks in combination with basic care) or a control condition (basic care only). In total, there were 4 groups in the intervention group.
and 4 groups in the control group. The patients completed questionnaires and performed physical tests at baseline and after the 12 week intervention period.

**MONICA**

The 2004 Northern Sweden MONICA project randomly selected 250 women and 250 men in each of five age groups (24-34, 35-44, 45-54, 55-64, and 65-74 years) from an updated national database. Selected individuals were invited to a health examination at the nearest healthcare centre. Measurements in the MONICA project were questionnaires, physiological measurements and event registration of acute stroke and acute myocardial infarction. The survey procedure and assessments are described elsewhere (59).

**Data**

Questionnaires, register data on sick leave, physical measurements, and interview transcription used in this thesis are described below:

**Psychological variables, health-related quality of life and perceived relaxation**

**Burnout**

In all papers burnout was measured using the *Shirom-Melamed Burnout Questionnaire (SMBQ)* (39-41). The SMBQ contains 22 items and each item is rated on a seven-point scale graded from 1 (almost never) to 7 (almost always). The SMBQ is comprised of four subscales: emotional and physical exhaustion (eight items); tension (four items); listlessness (four items); and cognitive weariness (six items). An overall index with the four subscales was computed as the mean of all items. Higher scores indicate a higher level of burnout.

**Anxiety, depression and obsessive-compulsive symptoms**

In Paper II, anxiety, depression and obsessive-compulsive symptoms were measured using the *Self-Rating Scale for Affective Syndromes (CPRS-S-A)* (60, 61). The CPRS-S-A contains 19 items, each rated on a seven-point scale (0-3 with half-point steps). The patients rated the degree of symptoms in the previous three days and the three subscales were calculated separately (anxiety 0-27 points; depression 0-27 points; obsessive-compulsive symptoms 0-24 points).

In Paper IV, anxiety and depression was measured using the *Hospital Anxiety and Depression scale (HAD)* (62). HAD contains 14 items where both subscales contains seven items each, scored on a four-point scale. The patients rated the degree of symptoms in the previous week and each
Methods

subscale was calculated separately (0-21 points). Higher scores indicate more symptoms.

Stress behaviour

Stress behaviour was assessed in Paper II by the self-rated questionnaire *Everyday Life Stress Scale (ELSS)* (63). ELSS contains 20 statements that refer to stress behaviours in everyday life situations. Each item was scored on a four-point scale and a total summary score (0-60 points) was calculated. Higher scores indicate more self-rated stress behaviours.

Fatigue

In Paper II and IV, fatigue was measured using the *Checklist Individual Strength questionnaire (CIS)* (64). CIS contains 20 items, each rated on a seven-point scale graded from 1 (“Yes, that is true”) to 7 (“No, that is not true”). The CIS is composed of four dimensions of fatigue: subjective experience of fatigue; concentration; motivation; and physical activity level. The patients estimated their fatigue during the previous two weeks and a total score (20-140 points) was calculated. Higher scores indicate a worse condition.

Self-esteem

In Paper IV, self-esteem was measured by the *Self-Concept Questionnaire (SCQ)* (65). SCQ contains 30 items and is based on seven components of self-esteem: significance; worthiness; appearance and social acceptability; competence; resilience and determination; control over personal destiny; and the value of existence. The patients estimated their self-esteem on an eight-point scale (0 = “completely disagree”) to (7 = “completely agree”), and these were summed to a total score (0-210 points). Higher scores indicate more self-esteem.

Health-related quality of life

In Paper IV, *Health-Related Quality of Life (HRQL)* was assessed by the Swedish version of the *SF-36*. The SF-36 is a generic quality of life instrument and consists of 36 items that measure eight physical and mental dimensions of health: “physical functioning”; “role limitations due to physical problems”; “bodily pain”; “general health perceptions”; “vitality”; “social functioning”; “role limitations due to emotional problems”; and “mental health”. Scores on each scale ranged from 0 (worst possible health state) to 100 (best possible health state). The eight dimensions were divided into the physical component summary score (PCS) and the mental component summary score (MCS) (66, 67).

Perceived relaxation

The *Relaxation Inventory* is a self-report measure used to assess relaxation and consists of three subscales: Physiological Tension Scale;
Physical Assessment Scale; and Cognitive Tension Scale (68). In Paper IV, degree of relaxation was measured with four items from the Swedish version of the Physical Assessment Scale (S-PARI) (69). The patients estimated their current state of relaxation on a five-point scale (1= “not at all”) to (5= “very good”), and these were summed to a total score (4-20 points). Higher scores indicate a more relaxed condition.

Work characteristics and work-related stress

Work characteristics were measured as type of work (“with people”, “with things”, or “with data”) (70) (Paper I-IV), overtime work (Paper I) and work-related stress (Paper I). Work-related stress was measured by the demand-control model (23). In the Swedish version there are five questions dealing with psychological demands and six questions dealing with decision latitude. In the demand dimension there were two questions in the MONICA study and one question in the REST study that did not correspond to the Swedish version. A factor analysis resulted in five questions in the demand dimension that were used when analyzing gender differences among burnout patients and four questions when analyzing differences between patients and MONICA population. The patients and the MONICA population estimated their working conditions on a four-point scale. When analyzing gender differences among burnout patients a summary index was calculated separately for demand (5-20 points) and control (0-24 points), where higher scores indicate high demands or high control. When analyzing differences between patients and the MONICA population, a dichotomization point was set so that high demands were defined as more than the 75th percentile and low control as less than the 25th percentile. High job strain was defined as having both high demands and low control.

Social support

Social support was assessed in Paper I by using the instruments Availability of Attachment (AVAT) and Availability of Social Integration (AVSI) from a condensed version of the Interview Schedule for Social Interaction (ISSI) (71). The two subscales consist of six items each. In paper I six items in AVAT was used but in AVSI only two items were available. AVAT estimates aspects of emotional support and AVSI assesses network. The patients estimated their emotional support (0-6 points) and network (0-2 points). When analyzing differences between patients and the MONICA population, a dichotomization point was set so that low emotional support was defined as less than the 25th percentile and low network support was less than the 25th percentile.
Methods

Sick leave

Number of sick leave days before randomization was collected from medical journals. The patient’s sick leave rate at baseline, after the 1-year rehabilitation, and at 12 month follow-up were collected from registers at the Social Insurance Agency and used in Paper II. Sick leave included sickness benefit, activity and sickness compensation, and rehabilitation compensation. In Sweden, the first 14 days of sick leave are paid by the employer. Thus, only sick-leave periods exceeding 14 day are included in the analyses.

Physical measurements

Balance

Static balance was assessed by standing on one leg without shoes and with eyes open. The lifted leg had contact with the calf of the supporting leg. The arms were hanging along the sides with the thumbs in contact with the thighs and at the same time the patient was turning the head from side to side at a self-selected speed. The time to perform the test without losing the balance was registered in seconds and a maximum test time was set to 120 seconds (72). The best of two trials was used in the analyses. Static balance was assessed in both REST and QIST but only reported in Paper IV. Dynamic balance was assessed in QIST (Paper IV) by walking 20 steps on a one cm thick line with shoes on, heel to toe, with eyes open. The patient performed one trial and time in seconds as well as number of steps outside the line was recorded (73).

Physical capacity and activity

The Two-kilometre (km) Walk Test (74) was used to assess physical capacity. The patients walked 10 laps on a 200 m athletic track indoors. An indoor track was used to avoid different weather conditions that could affect the results. Before the trial the patients got verbal instructions to “walk the distance as fast as you can without risking your health”. Patients’ heart rate at the end of the walk, walking time, age, sex, and body mass index (BMI) were recorded and used in a prediction equation (75) to predict maximal oxygen uptake (VO2max). Due to limitations in the prediction equation only walking time is presented. The Two-km Walk Test is a valid test for moderately fit men and women (76), and obese adults (77). Physical capacity was assessed in both REST and QIST but only reported in Paper IV. Physical activity in everyday life was assessed in QIST (Paper IV) by pedometer use (SILVA Pedometer Plus). The pedometer recorded total daily step counts during two days. The patients wore the pedometer from getting up in the morning until to going to bed and an average number of steps for the two days was recorded.
Interview transcriptions

Semi-structured face-to-face interviews were performed. The interviews lasted 45 to 90 minutes, were tape-recorded, and transcribed verbatim. An interview guide was used that included themes to be covered. The themes were how the patient perceived her/his own rehabilitation process, how different parts of the programs were experienced, the meaning of the group and the personnel at the Clinic. The interview ended with the patient reflecting on the future and how she/he should manage without support from the program. The themes were slightly adjusted between the interviews so that information in an interview could be further explored in a following interview.

Rehabilitation

Cognitively-oriented Behavioural Rehabilitation (CBR)

The CBR program evaluated in Papers II and III was developed from a stress management program for women with coronary heart disease (78). The program was modified to suit patients with burnout by adding discussion components of affect awareness (79), sleep, and work rehabilitation. The CBR program consisted of 30 group sessions, with 20 meetings the first six months and 10 meetings the last six months. Each group session was three hours long with a 30 minute break in the middle. A group leader especially trained in CBR led the group consisting of six to nine patients. There were at least two patients of the same sex in each group. Every session started with 10 minutes of seated relaxation followed by a specific theme. The CBR program consisted of five key components: 1) education (for example, stress reactions, sleep, affect, medication, the importance of rest in order to recover); 2) awareness of reactions and “self-talk”; 3) development of behavioural/cognitive/emotional skills; 4) spiritual issues and life values; and 5) preparation for return to work. The CBR group reassembled at three, six, and 12 months after the 1-year rehabilitation. During the 1-year rehabilitation there were three group meetings for spouses and/or relatives.

Qigong

Qigong was evaluated in Papers II-IV. In the REST study, Qigong was performed in 1-hour sessions, once a week for one year. In the QIST study, Qigong was performed in 1-hour sessions, twice a week for 12 weeks. The Qigong groups were gender-mixed with 8-16 patients in each. A physiotherapist specially trained in Qigong by © TaiChi Akademien AB, Stockholm, Sweden led the groups. The same Qigong exercises were used in both studies and the program consisted of three parts: 1) warm-
up movements; 2) basic movements to affect body awareness, balance and coordination, breathing and muscular tension; and 3) relaxation and mindfulness meditation with self-performed body massage at the end. The basic movements visualize different animals like “the crane stretches itself”, “the rhinoceros looks at the stars” and “the shambling bear”. In the mindfulness meditation the patients were asked to think of a positive memory and re-establish the situation with their senses. During the Qigong program background music was used and the movements were mostly performed standing. Patients who preferred could perform the movements in a sitting or lying position. A printed summary of the Qigong movements was offered to patients who wanted to perform additional Qigong at home.

Basic Care

All patients in the REST and the QIST study took part in basic care at the Stress Clinic. Basic care included follow-up visits to the physician who handled medication prescriptions and sick leave certificates. The physician also gave general advice concerning recovery, sleep, routines in daily life and physical activity. Work rehabilitation support was also offered to the patients. The concept of work rehabilitation support used in Papers II and III consisted of a rehabilitation meeting at the end of the program in which the patient, the responsible physician, the employer and the officer at the Social Insurance Agency participated.

Statistics and analysis

Statistics

All statistical analyses were performed in SPSS© version 13.0 (Paper I) or 14.0 (Paper II-IV) (SPSS Inc., Chicago, IL, USA) and a $p$-value less than 0.05 was considered significant. Power analyses were performed in Papers II and IV. Differences between groups were analyzed using Pearson’s chi-squared test (categorical variables) and independent two sample t-test (continuous variables). To test if there were any differences between women and men in comparison with a general population in emotional support and jobstrain, Breslow-Day test with Tarone’s adjustment were used and only reported in the cover of the thesis. In analyses of intervention effects, repeated measures analyses of variance (Paper II), effect size (80) (Paper II), and non-parametric statistics (Wilcoxon Signed Ranks Test and Mann-Whitney Test) (Paper IV) were used. Per-protocol analyses (patients who completed the intervention period) and intention-to-treat analyses (all randomised patients) were performed in Papers II and IV. An imputation procedure was used to adjust for missing responses in single items. Missing responses were replaced with the median response for the group and this occurred in 0.3-0.4 percent (Paper I), 0.2-0.6 (Paper II), and 0.2-0.7 (Paper IV) of the items. Missing responses in the intention-to-treat analyses (Papers II and
IV) were replaced with the mean value change between the measurement points. Mean value change was calculated separately for the randomisation groups as well as for women and men.

Grounded theory

Grounded Theory method (81) of constant comparison was used in Paper III to describe the patients’ experiences of the REST program. Transcribed interviews were first analysed by open coding, followed by a mutual comparison and a final negotiated outcome (81, 82). The next step was to perform selective coding where open codes with similar elements were compiled into categories (82). Further, there was a process to find axes between the categories and to identify a core category. Finally, a theoretic model of the rehabilitation process for patients with burnout was developed.
RESULTS

Description of burnout patients in relation to gender and a general population

Significant differences were found when comparing the patients with burnout with the general population. Patients with burnout reported a higher rate of unemployment, a more restricted social network and higher work demands. In addition, women with burnout reported less emotional support, a more sedentary work situation, higher job strain and worked to a greater extent “with people” than women in the general population. Men with burnout were more often living in families compared with men in a general population (Paper I).

When comparing women and men with burnout some significant gender differences were found. Women with burnout reported a higher degree of sleep disturbances, lower job control, more unpaid work and they worked to a greater extent “with people”. Men with burnout perceived a more restricted social network and reported more overtime work (Paper I). Further analysis displayed that compared to men with burnout, women with burnout have higher odds of less emotional support in comparison with a general population sample. This difference was not found for job strain.

Rehabilitation programs

Dropouts

A total of 29 patients withdrew from the REST study (Paper II) and 14 patients from the QIST study. There were no significant differences in SMBQ score, sex or age between patients who completed the intervention period and the dropouts. In Paper III, one patient withdrew before the interview.

Compliance

In the REST study (Paper II) the mean attendance in program A was 25 ± 3.1 of the 30 CBR group sessions and 21.7 ± 7.5 of the 35 Qigong sessions. Program B attendance was 21.6 ± 7.9 of the 35 Qigong sessions. In the QIST study, patients in the intervention group attended 15.2 ± 5.3 of the 24 Qigong sessions.

Complementary and conversational treatment

Some patients in REST (Paper II) (26 % program A and 44 % program B) and in QIST (21 % intervention group and 20 % control group) reported having complementary treatment outside the Stress Clinic during the intervention period. These included massage,
acupuncture and different treatments of body awareness. Patients in REST (Paper II) (16 % program A and 44 % program B) and in QIST (30 % intervention group and 33 % control group) also reported having individual or group conversational therapy outside the Stress Clinic during the intervention period. The additional conversational therapy was used significantly more often in program B compared with program A in the REST study (Paper II).

**Effects of rehabilitation**

**Per-protocol analysis**

There was no significant time by group interaction or group effect between program A and B in REST (Paper II) and no significant between-group differences between the intervention and control group in QIST. All groups improved significantly over time with reduced levels of burnout, anxiety, depression and fatigue. In REST (Paper II) both programs reported a significant reduction of stress behaviour and obsessive-compulsive symptoms. In QIST, both groups improved significantly over time with increased dynamic balance and physical capacity. Values of the psychological variables, HRQL, perceived relaxation and physical measurements at baseline and after the intervention in REST (Paper II) and QIST are presented in Table V.
Results

Liggande Table V
The time course of burnout (SMBQ) in the REST study (Paper II) showed an improvement during the intervention period and follow-ups in both programs (Figure 4). The time course for the other psychological variables was almost the same. There was no significant difference between the programs in REST (Paper II) with regard to the effect size of the psychological variables (Figure 5).

Figure 4. Results of the SMBQ, from the analyses of variance with repeated measures in the REST study (Paper II). Rehabilitation program A —— Rehabilitation program B ——

Figure 5. Effect size values in the per-protocol analyses in the REST study (Paper II) after 1-year rehabilitation for Shirom-Melamed Burnout Questionnaire (SMBQ), Everyday Life Stress Scale (ELSS), Checklist Individual Strength questionnaire (CIS), Self-Rating Scale for Affective Syndromes (CPRS-S-A) depression, anxiety and obsessive-compulsive symptoms in rehabilitation program A (n=58) and rehabilitation program B (n=49). Effect size values: < 0.2 = no effect, 0.2-0.5 = small effect, 0.5-0.8 = medium effect, > 0.8 = large effect.
When comparing women and men in REST (Paper II), a significant time by sex interaction in burnout (SMBQ) (Figure 6) and fatigue were found in program A, and women improved significantly compared to men. That interaction was not found between women and men in program B (Figure 7). At 12 month follow-up, mean score for burnout in program A was significantly lower for women (3.8) compared to men (4.8). In addition, significantly more women in program A (78%) than men (31%) reported an SMBQ score < 4.6 at 12 month follow-up.

![Figure 6. Results of the SMBQ in the REST study (Paper II) program A, from the analyses of variance with repeated measures. Men ——— Women ———](image-url)
Results

A sub-analysis was performed of patients in REST (Paper II) (n=73) who had no additional conversational therapy outside the Stress Clinic during the intervention period. A significant time by group interaction was found in depression, anxiety and obsessive-compulsive symptoms, with patients in program A significantly improved.

Intention-to-treat analysis
In the REST study (Paper II) there was a significant time by group interaction in obsessive-compulsive symptoms, with patients in program A significantly improved. Patients in program A had also significantly larger effect sizes in stress behaviour and obsessive-compulsive symptoms compared to patients in program B. There were no significant between-group differences between the intervention and control group in the QIST study.

Sick leave
There were no significant differences between patients in program A and B in the REST study (Paper II) regarding sick leave rates at baseline, after the intervention period or at 12 month follow-up. Patients in both programs improved significantly over time with decreased sick leave rates. At the 12 month follow-up, 39 % of the patients in program A and 37 % of the patients in program B remained on full time sick leave. There were significant association between a SMBQ score $\geq 4.6$ and sick leave, and between length of sick leave before randomisation and future sick leave. Sixty-one percent of the patients who were on full time sick leave at 12 month follow-up had an average SMBQ score $\geq 4.6$, and 88 % of the
patients who were on full time sick leave at 12 month follow-up had been on sick leave for more than six months at randomisation.

Experiences from the rehabilitation programs in the REST study

The patients' experiences of the 1-year rehabilitation programs in the REST study (Paper III) were that good encounters with affirmation and group cohesiveness were necessary base for rehabilitation. After time in the rehabilitation program the patients’ started to reflect upon what had contributed to their burnout. In this process the patients experienced support and affirmation from the group and the clinic personnel. The patients developed insight into the importance of balancing work, family and one’s own recovery and understood the need to take responsibility for their lives again. With the help of tools learned and practiced in the rehabilitation programs, the intellectual insights became embodied by practising to listen to body signals, setting boundaries and finding new ways of behaving. The way patients in the respective groups obtained insight and embodied it differed. Patients in program A primarily used cognitive tools learned in group discussions. In contrast, patients in program B used physical and psychological experiences from the Qigong movements. At the end of the rehabilitation process the patients had thoughts about the future that included both hope and fear. The process during the 1-year rehabilitation programs in the REST-study, as described by the patients was used to develop a theoretical model (Figure 8) (Paper III).
Figure 8. Theoretical model constructed from burnout patients’ experiences from a 1-year rehabilitation program in the REST study (Paper III). Sub-categories, categories and the core category “Take Charge” are presented.
DISCUSSION

The overall aim of this thesis was to describe patients on long-term sick leave because of burnout and to evaluate rehabilitation programs for this patient group. The findings indicate that patients with burnout differ from a general population with regard to perceived social support and work-related factors. There were no significant differences in effect in a per-protocol analysis of CBR and Qigong compared to Qigong alone (REST), or between a Qigong intervention compared to a control condition (QIST). Improvements were found in all rehabilitation program groups. The patients in programs with CBR and Qigong or Qigong alone experienced beneficial improvements that resulted in an ability to take charge of their lives.

Description of burnout patients in relation to gender and a general population

Both female and male patients in the REST study reported high levels of burnout that were confirmed by clinical and psychological measurements. Reported levels of burnout were even higher than other patient samples with burnout (8, 83). More female patients with burnout were included in our studies which are similar to study populations in most studies on rehabilitation for burnout (83, 84). This could reflect that more women are affected by burnout or could also be due to women being more inclined to consult doctors when sick. In population studies women scored higher on exhaustion compared to men (10, 13), but in REST there was no significant difference in levels of burnout at baseline between women and men. One reason for this could be that burnout measured with the SMBQ was used as inclusion criteria. Differences between women and men in the study were mostly the same as those found in Swedish society, i.e., the women more often worked with “people” (85), worked fewer hours in paid work, and had more hours in domestic work compared to the men (86). An interesting finding was that male patients with burnout more often lived in families compared to men in the general population. This is contradictory to earlier studies where being married is found to be protective for men (10, 13). Maybe men who are living in families are supported to consult a doctor, while men who are living alone tries to manage on their own. However, there were few men in the study and a large number of comparisons were made, so association by coincidence can not be ruled out.

The burnout women in our study reported lower job control than the men. This has previously been found in a European multicentre study on gender differences in perceived job stress (87). Patients in the REST study reported higher work demands compared with the general population. The REST study was cross-sectional and no conclusions regarding cause and effect can be drawn. However, a recent prospective
study of a Swedish working population sample found that low control, lack of social support, downsizing and especially demands at work were associated with emotional exhaustion (6). Gender differences in the prospective study showed that high demands and low control were more common in women. Furthermore, lack of support from fellow workers predicted emotional exhaustion symptoms in women, whereas lack of support from superiors increased the risk for men (6). Thus, social support is an important factor in relation to burnout. Patients with burnout in the REST study perceived a more restricted network compared to the general population and female patients experienced less emotional support compared to women in the general population. Our data are cross-sectional but the association is in accordance with findings in the longitudinal study (6). Associations between poor social support and burnout is found in other studies as well (5, 8). Social support at work is also emphasized as important for work return in women on sickness absence due to work related strain (88). In this thesis, social support was not measured specifically at work but defined in more general terms to include family, friends, co-workers or others, but the association seems to be similar. There were significant gender differences in social support among patients with burnout. Men reported a more restricted network compared to women. This could be an effect of that caring for relations is a larger part of the female identity, but also due to differences in work situations, as men in the study reported more overtime work, which reduces time for social contacts. The same relation between overtime work and restricted social networks was found in women in a study by Verdonk et al. (89) who found mental health problems and social isolation among young highly educated women, with high rate of overtime work. In our study lack of emotional support seemed to be more associated with burnout among women. This raise questions on whether women and men are in need of different social support as well as if the social support provided by women and men differ. Kawachi and Berkman (90) have shown that women have more emotionally intimate relationships than men and therefore suffer more from others’ problems. This could explain the higher risk for burnout found in women “working with people” but could also mean that women, when they are sick, experience guilt because they are not able to help others as they used to. Men, on the other hand, could be the receivers of support provided by women.

Effects of rehabilitation

All groups in the rehabilitation programs (REST and QIST) showed positive effects in psychological variables over time. The same pattern has been seen in other rehabilitation studies of sickness absent patients with stress-related illness or burnout (83, 84, 91-93).

Explanations to the lack of differences between the rehabilitation programs could be viewed in several ways. There could be a natural recovery course in burnout, and to identify additional effects from
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rehabilitation programs might require larger study populations. Also, the instruments used in the evaluations might not have been sensitive enough. Another explanation could be that all groups reported high frequencies of complementary and conversational treatment outside the Stress Clinic during the intervention periods. Almost half of the patients in program B in the REST study reported having conversational therapy outside the program. This could have levelled out the differences between the programs in REST, but could not explain the lack of difference between the groups in QIST. Instead, low compliance in the intervention group in QIST could have made the intervention less effective.

Similarities between the rehabilitation programs must also be taken into account. In the third developmental phase, CBT is influenced by eastern philosophy (54) from which Qigong also emerged. CBR used in our study is not equivalent with CBT but is based on the same principles. In both CBR and Qigong the patients learned to be mindful and to be ‘here and now’, but in different ways as the patients confirmed in the interviews. During CBR, patients learned to use cognitive tools to be mindful and also practiced awareness daily with different types of homework, e.g., awareness in watching nature or eating with combination with breathing. In Qigong, patients received mindfulness through slow, focused movements and breathing. Granath et al. (50) found similar results when they evaluated CBT and yoga for individuals with stress-related problems. Both groups improved with no differences between the two interventions (50). Other similarities between the rehabilitation programs could be the “common factors”. Common factors are those such as expectations for improvement, warmth and attention, understanding, encouragement in the treatment setting, and are not specific to any particular technique (94). The results from the interview study (REST) confirmed that there were common factors that influenced both the CBR and the Qigong groups. Good encounters, affirmation, and support from professionals and other patients were expressed as being very important for the informants and a necessary basis to initiate behavioural change. All programs were group based. Meeting other patients in same situation decreased their feeling of being insane. This has previously been confirmed in focus groups discussions by women on sick leave due to work related strain (88). Support groups for women with breast cancer have also been shown beneficial for recovery (95).

Meta-analyses are conducted to determine the effect of interventions that aimed to reduce work-related stress. Interventions on the individual level are reported to be stronger (96, 97), and this is particularly true for cognitive-behaviour approaches (97, 98). A meta-analysis recommended that cognitive-behaviour programs should not be combined with other treatments because of reduced effects (98). If this is the case, the effect of CBR seen in our study might have been stronger if it was not combined with Qigong. As many patients also searched for additional treatment outside the Stress Clinic, three or more treatments could have been evaluated at the same time.
The CBR groups in the REST study were gender-mixed and contained at least two men in each group, but there was always a majority of women. Women in these groups had more favourable results than men in burnout and fatigue outcomes. Similar results are reported by Jensen et al. (99) who found that women with non-specific spinal pain had greater improvement in health-related quality of life than men in a gender-mixed CBT rehabilitation programs. Contradictory findings on the role of gender for treatment effects on depression from individual and group CBT are reported by Watson and Nathan (100). They found equivalent benefits in women and men but they studied gender-separate groups (100). In cardiac rehabilitation, gender-mixed stress management programs with a majority of men have been common. This situation was supposed to be unfavourable for women. Therefore a separate stress management program for women with coronary heart disease was developed (78) and found to be beneficial for women’s psychological well-being (63). A more even distribution of women and men in our groups or separate groups for women and men might have affected the results.

No gender differences were found in relation to qigong. Neither in the rehabilitation programme B in REST or in the QIST study (stratified analyses not shown in the manuscript). Gender differences which emerged in the interview study in REST were in most cases the same as between women and men in the Swedish society in general.

Work capacity and burnout

Burnout was first described in work settings among individuals still at work. Today more research is published on burnout in patients on sick leave. Sickness absence in Sweden has varied widely over time and this has been especially true during the last two decades (101). Change in working life from physical to mental work and blending of work and private life are discussed as some reasons for increased sickness absences (102). General changes in legislation and the trade cycle also are important factors in explaining sickness absence in Sweden. Sickness absence increases when unemployment rates decrease and conversely when unemployment rates increase, sickness absences decrease (101). There is no sharp distinction between sick and not sick in relation to stress-related and mood disorders. Similar symptoms have been given different diagnoses throughout history. The diagnosis neurasthenia with mental fatigue was developed in 1869, the concept of stress in 1940, chronic fatigue syndrome with decreased immune defence in 1980, and finally burnout syndrome in the 2000 (103). This shows that individuals perceived similar stress-related symptoms regardless of the diagnoses.

Among individuals with stress-related illness, sickness absence from work for more than one year reduced their ability to return to the labour market (104). Early intervention could be an important factor in increasing work return as was shown by van der Klink et al. (92). In the REST study, the average sickness absence rate before randomisation was almost one year, which probably affected the work return rate. This
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interpretation is supported by the association between length of sick leave before randomisation and future sick leave. Most of the patients who were on fulltime sick leave at 12 months follow-up had been on sick leave for more than six months at randomisation. Another factor found to increase work return rate is to increase the focus on workplace rehabilitation support during the intervention (91). In the REST study, work rehabilitation support often consisted of a single rehabilitation meeting. It could be important for the patients to integrate newly adopted behaviours in the work place by structured activating plans and a coordinated rehabilitation between responsible parties. It might be important for some patients to have the support from the rehabilitation team in work place changes and/or to try to work in a different setting. This was suggested by some patients in the REST interview study. Another hindrance for work return could be domestic strain. Domestic strain is a hindrance in rehabilitation for long-term sick listed women with musculoskeletal disorders (105). In the REST study, female patients reported more household work, but there was no difference in work return rate between women and men.

Methodological considerations

At the time when this thesis’ studies were performed, there was no structured rehabilitation for patients with burnout in health care. Many patients struggled to come to the Stress Clinic and this could have led to the selection of more motivated patients. The patient samples in our study had a high education level, which could reflect the labor market in Umeå, and raise the question of whether our results are generalizable. There are few studies on the effect of education on the outcome of CBR and Qigong, but in a study by Watson and Nathan (100) both women and men of different levels of education progressed during individual or group CBT. Thus, a reasonable assumption is that educational level does not have an impact on CBR treatment on patients with burnout.

Paper I used a cross-sectional design that compared patients with a general population. Therefore no conclusion regarding causality could be drawn. Despite this, a picture of differences was found between the two populations. Paper II and IV consist of RCT that are the foundation of evidence-based research. Advantages of RCT are that participants are assigned randomly to different groups to protect against selection bias (106). However, disadvantages with RCT for patients on long-term sick leave should be discussed. Despite randomization, all potential variables that could affect rehabilitation might not be randomly distributed. Some patients may have greater benefits from rehabilitation in an early stage while others who have been on sick leave for a long time may need different rehabilitation measures such as individual CBT. Furthermore, patients in both REST and QIST reported having complementary and conversational treatment outside the Stress Clinic during the intervention period and this probably affected our results. This is a potential problem in both shorter (Paper IV) and longer (Paper II) RCT intervention
periods, where patients suffering from severe exhaustion tend to search for additional treatments (93). Under these circumstances it is difficult to find suitable control conditions. To have a control condition without any treatment for patients with severe and lengthy diseases could be considered as unethical. Another disadvantage with a RCT design is that patients could have a positive or negative attitude toward a particular treatment (107). Our and others (93) experiences are that most of the patients allocated to a program with less intervention were disappointed. On the other hand, some patients were uncomfortable with CBR because of talking in a group and were more content with only Qigong (Paper III). Some patients were disappointed to be allotted to program B and dropped out. This could create a problem with statistical power and this was confirmed in REST where an intention-to treat analysis found differences between programs. From a clinical perspective, RCT might not be the optimal research method for evaluation of rehabilitation programs where different patients might need different combinations of measures.

Stress management intervention programs are based mainly on psychological variables. Often cognitive and relaxation interventions are evaluated with psychological measurements, while exercise interventions are measured with physiological measurements. In these circumstances it is difficult to compare the different interventions (98). A broader perspective concerning measurements was taken into consideration when rehabilitation programmes were evaluated in this thesis. Psychological variables, HRQL, perceived relaxation, and physical measurements were assessed.

Since different instruments has been used to measure burnout there are problems in the estimation and comparison of the prevalence of burnout. There are also problems when different cut-off scores, often based on quartile splits, are used to define burnout. Cox and Tisserand (1) discuss the problem of whether burnout is a continuous condition or a dichotomized state. One of the main issues for burnout researchers should be to define cut-off scores and diagnostic criteria for burnout in the clinical setting (1). In this thesis, the diagnostic criteria for the Swedish exhaustion syndrome is only used in Paper IV because the REST study started before the diagnostic criteria for exhaustion syndrome was developed. The diagnosis for burnout in the REST study was used as defined by Shaufeli and Enzmann (7). They formulated a definition of burnout that is applicable to the workplace. Because of this a questionnaire measuring burnout in the work domain such as the MBI would be used. We decided not to use the MBI because some of the questions on depersonalization (such as “I don’t really care what happens to some recipients”) do not fit our culture. Other researchers in Denmark have given this as a reason not to use the MBI (43). The REST study and the Stress Clinic started during the same time period. We learned from Swedish colleagues in the same field who had positive experiences with the SMBQ. Therefore we also chose the SMBQ for our evaluations. Our experiences in working with the SMBQ are that it could be answered
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easily and used by patients in different settings. There was only one question that was not always answered and the question was “I feel that I don’t have the strength to go to work in the morning”. Patients who have been on long-term sick leave have difficulty with this question. Since diagnostic criteria for the Swedish exhaustion syndrome are now established and stress factors can be identified in both work and general settings, a suitable questionnaire should be used. Kristensen et al. (43) formulated a valid and reliable instrument to measure burnout, namely the CBI with the three sub-dimensions: personal burnout, work-related burnout, and client-related burnout. The CBI can be used both inside and outside the work place and this would satisfy the Swedish diagnosis of the exhaustion syndrome. In Sweden a new measurement of burnout according to the new diagnosis criteria, the s-USM, have been formulated and are being validated (44). These measurements need also to be evaluated in the clinical setting where important information of their usefulness can be obtained.

In this thesis anxiety and depression were measured with the CPRS-S-A (Paper II) and the HAD scale (Paper IV). We changed to the HAD scale because it was an easily self-reported instrument that was beginning to be used in the clinical health care setting. The HAD scale is also useful in screening for clinically significant anxiety and depression (62). The State-Trait Anxiety Inventory (STAI) (108) would have been interesting to use in this thesis to understand if the anxiety consists of a more state (temporary) or trait (stable) condition. State Anxiety scores have previously been reported to decrease significantly after 30 minutes of Qigong in comparison with a non-active control group (109).

Before inclusion in our studies, all patients underwent medical and psychological examination to determine if the patients fulfilled the inclusion criteria. Post-traumatic stress disorders (PTSD) was one of the exclusion criteria in the REST study but a specific questionnaire measuring PTSD was not used. This was a limitation since PTSD and/or attention deficit hyperactivity disorder (ADHD) are reported to be under-diagnosed among long-term sick leave patients with burnout (110).

Clinical implications and further research

Burnout is troublesome for both women and men. Questions could be raised of how prevention and/or a rehabilitation program should be performed for this patient group. An early rehabilitation is important in order to shorten the sick leave period and result in earlier return to work (92, 104). A multimodal rehabilitation is preferable. A team of different professionals would be best suited to adjust multimodal rehabilitation to individual needs. This should include a base of good encounters, affirmation, and support. In future evaluations of rehabilitation programs it is important to find other evaluation methods than RCT’s, as rehabilitation should emanate from the individual patient’s needs and motivation.
Timing of the rehabilitation is important and should be based on the patient’s health status and motivation. Rehabilitation gives the patients’ a structure to their daily lives (54). The rehabilitation could include support for the patients to acquire daily routines such as exercise, recovery, and eating and sleeping routines. These are reported to be important for women with sickness absence due to work related strain to regain control over their own situations and to master life as a whole (88).

Rehabilitation could be performed individually, as part of a group, or a combination of both, depending on what is appropriate for the patient (111). Further research should investigate if group rehabilitation for patients with burnout would be more effective if there is a more even gender distribution versus separate groups for women and men.

The patients need support for mental insights, to find new ways to behave in stress related situations, and for balancing activity and recovery, which could be done with both CBR and Qigong.

Since a Qigong intervention twice a week for 12 weeks had no additional effect as compared to basic care it would be interesting to study if a more intense physical activity would be more efficient. Cognitive impairments have previously been found in patients with chronic burnout syndrome (112, 113), and burnout patients are often depressed. Physical activity and particularly aerobic fitness training have positive effects on brain function and cognition (114), and physical activity is also effective in reducing depression (115). From this perspective it would be interesting to study early rehabilitation with physical activity and prescription of preferred physical activity (FaR) for patients with burnout. An uncontrolled study found that after six months, FaR in primary health care changed the patients’ behaviours to a more physically active lifestyle and an increased quality of life (116). In 1974, Freudenberger (15) reported advice on the prevention of burnout. Since burnout is an emotional and mental exhaustion, the physical activity should not consist of meditation or yoga. He suggested that the type of physical exercise should be more active and cause the individual to become physically tired.

The physical exercise should be individualised to increase the patient’s motivation for a sustainable physically active lifestyle. Patients who have been exhausted for a long time maybe need support to increase their physical activity level. Other patients who have high level of physical activity due to anxiety may need to decrease the activity level and perform exercises that are more focused on body awareness and mindfulness.

In an early multimodal rehabilitation, work rehabilitation support should be included. A structured activating plan and coordinated rehabilitation should be set up by the responsible parties, i.e. the officer at the Social Insurance Agency, the employer, the responsible physician, and the patient. Some patients maybe need support to change their work. However, most patients could go back to their ordinary work with support at the work place. Individual adjustments at the work place might be necessary as secondary prevention and gender aspects need be taken into consideration. Since domestic strain is reported to be a
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hindrance in rehabilitation for women (105) a more even distribution of unpaid work between women and men would be desirable. The employer could also adjust the work setting with preventive strategies for the women. For example, the opportunity to perform physical exercise might be difficult for women outside work because of household responsibilities. In some Swedish male dominated occupations, i.e. police, fireman, and military, physical activity is part of the work time. This is not obvious in female dominated work, i.e. health care. Another important factor in work rehabilitation is to have continuous contact with the supervisors and work-mates. This has previously been shown to be important for women with sickness absence due to work related strain. Support from the employer and work-mates increased the women’s self-confidence and encouraged them to return to work (88). This is important for both women and men.
CONCLUSIONS

- Compared to a general population, patients with burnout perceived more demands at work and less social support. The difference is more pronounced among women.

- Gender differences among burnout patients are mostly the same as those seen in society as a whole, but female patients are more vulnerable due to lack of emotional support.

In rehabilitation for patients on long-term sick leave because of burnout

- Patients improve in psychological variables and sick leave rates from both a program with CBR combined with Qigong and one with Qigong alone, and there were no differences between the programs.

- CBR combined with Qigong has advantages compared to Qigong alone when drop outs are included as well as when patients with additional conversational therapy are excluded from the analyses.

- CBR combined with Qigong seems to suit women better than men.

- Patients experienced tools learned in both CBR combined with Qigong and Qigong alone as helpful in recovery and for taking charge over their lives.

- Qigong twice a week for 12 weeks has no additional effect as compared to basic care.

- Good encounters with affirmation and support are important as a basis for behavioural change.

- Group rehabilitation has advantages as recognition and support from the group.

- Early rehabilitation measures are important to prevent long-term sickness absence.
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