Effects of a Multidisciplinary Stress Treatment Programme on Patient Return to Work Rate and Symptom Reduction: Results from a Randomised, Wait-List Controlled Trial

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Abstract

Background: To evaluate the efficacy of a multidisciplinary stress treatment programme. **Methods:** General practitioners referred 198 employed patients on sick leave with symptoms of persistent work-related stress. Using a waitlisted randomised controlled trial design, the participants were randomly divided into the following three groups: the intervention group (IG, 69 participants); treatment-as-usual control group (TAUCG, 71 participants), which received 12 consultations with a psychologist, and the waitlisted control group (WLCG, 58 participants). The stress treatment intervention consisted of nine 1-hour sessions conducted over 3 months. The goals of the sessions were the following: (1) identifying relevant stressors; (2) changing the participant's coping strategies; (3) adjusting the participant's workload and tasks, and (4) improving workplace dialogue. Each participant also attended a mindfulness-based stress reduction (MBSR) course for 2 h a week over 8 weeks. **Results:** The IG and TAUCG showed significantly greater symptom level (Symptom Check List 92) reductions compared to the WLCG. Regarding the return to work (RTW) rate, 67% of participants in the IG returned to full-time work after treatment, which was a significantly higher rate than in the TAUCG (36%) and WLCG (24%). Significantly more participants in the IG (97%) increased their working hours during treatment compared with the participants in the control groups, TAUCG (71%) and WLCG (64%). **Conclusions:** The stress treatment programme – a combination of work place-focused psychotherapy and MBSR – significantly reduced stress symptom levels and increased RTW rates compared with the WLCG and TAUCG.

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Introduction

Occupational health research has reported a relationship between the prevalence of mental disorders, such as depression, anxiety, adjustment disorders, and other stress-related conditions, in addition to long-term sick leave and increased occupational stress across many developed, industrialised countries [1, 2]. Prolonged stress can have serious implications for an individual's health, quality of life, and occupational function [3]. Furthermore, this stress is associated with a loss in productivity (the so-called 'presenteeism' [4] effect (i.e. on-the-job

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lack of productivity), short- and long-term sick leave, and early retirement. These consequences place a substantial burden on the economies of many developed countries [5–7].

There have been many interventions designed to alleviate job stress over the past two decades [8–10]. These interventions are strongly heterogeneous in terms of (1) intervention type; (2) intervention volume; (3) intervention level; (4) participants, and (5) outcome variables, making it difficult to compare the results of different studies.

Two meta-analyses found a significant overall effect size that indicated that stress-management interventions are effective compared to no treatment [9, 10]. In addition, Marine et al. [11] exclusively reviewed healthcare workers and reported that cognitive behavioural therapy (CBT) and an intervention that combined CBT and a relaxation skill training programme for stress symptoms had significant effects. Organisational interventions yielded virtually no effect. These results are consistent with the findings of Briner and Reynolds [12]. However, a study focusing on participation and autonomy using a participative action research design in a work reorganisation intervention showed positive results. The results taken during a 1-year follow-up visit [13] indicated that the participative action research intervention significantly improved employees' mental health, sickness absence rates, and self-rated performance. These authors concluded that increases in job control mediated the benefits of this work reorganisation intervention. However, Giga et al. [14] argued that 'it was the extent that the particular combination of strategies matched the needs of employees that was central to the success of the strategies' (p. 162). This argument is supported by studies that found no significant effects for interventions based on general information [15].

Reviews and evaluation studies have found positive effects on the return to work (RTW) rate from interventions based on CBT and significant effects from interventions that were directed both at the worker and the workplace [16–18]. A process evaluation study concluded that guidelines for management of common mental health problems and RTW should focus on regular contact with the worker and the work organisation [19, 20]. Other findings imply that the amount of contact and the number of consultations is important for the effect of the intervention. Thus, small-scale interventions do not seem to work, while more comprehensive interventions have shown an effect on RTW in a 1-year follow-up [16, 21–26]. This effect seems to be the highest after a few weeks [10, 18]. A

4-month multidisciplinary stress treatment programme, consisting of stress-handling sessions, relaxation exercises, physical exercise, and contact with the workplace, has shown a significant effect on the RTW rate in a non-randomised, controlled study [27]. This programme, developed by the first author of this article, is based on the assumption that individual-focused treatment provides the patients with the opportunity to reflect on and understand their negative experiences and the pressures they feel in their working environment. The modified programme, called the Hillerød concept, is evaluated in a randomised controlled trial (RCT) in the present article.

The intervention consists of stress-coping sessions, which are based on CBT principles and are directed at both the worker and the workplace. These sessions were inspired by experiences from Sweden, where labour market conditions are more comparable to the Danish [28–31]. Relaxation exercises have been expanded to participation in an 8-week mindfulness-based stress reduction (MBSR) programme developed by Jon Kabat-Zinn [32]. Research that has found medium effect sizes of MBSR on mental health symptoms inspired this expansion of the programme [33–35].

The objective of this study is to evaluate the effects of this multidisciplinary stress treatment programme for employees on sick leave with work-related stress in a randomised wait-list controlled design. The effects of the programme on symptom levels and the RTW rate are compared with groups that received no treatment (a wait-list control group) and treatment-as-usual (consultations with a psychologist).

Methods

Participants
From June 2010 to September 2010, we invited all general practitioners (GPs) in the capital region of Denmark (1.6 million inhabitants) to refer patients with stress symptoms to our project. The purpose of the study and its inclusion criteria were described in the invitation. The inclusion criteria for participation were as follows: the patients needed to (1) be on full- or part-time sick leave; (2) to be employed or self-employed; (3) to have had significant symptoms of work-related stress for months, and (4) to be motivated to participate. Participants were excluded from the study if they (1) currently abused alcohol or psychoactive stimulants; (2) were diagnosed with a major psychiatric disorder, or (3) suffered from a significant somatic disorder assumed to be the primary cause of their stress condition.

From August 4, 2010, to April 8, 2011, GPs referred 320 potential participants. All 320 persons were invited to an assessment interview at Bispebjerg Hospital to determine eligibility. The invitation letter provided information regarding the date and place of the
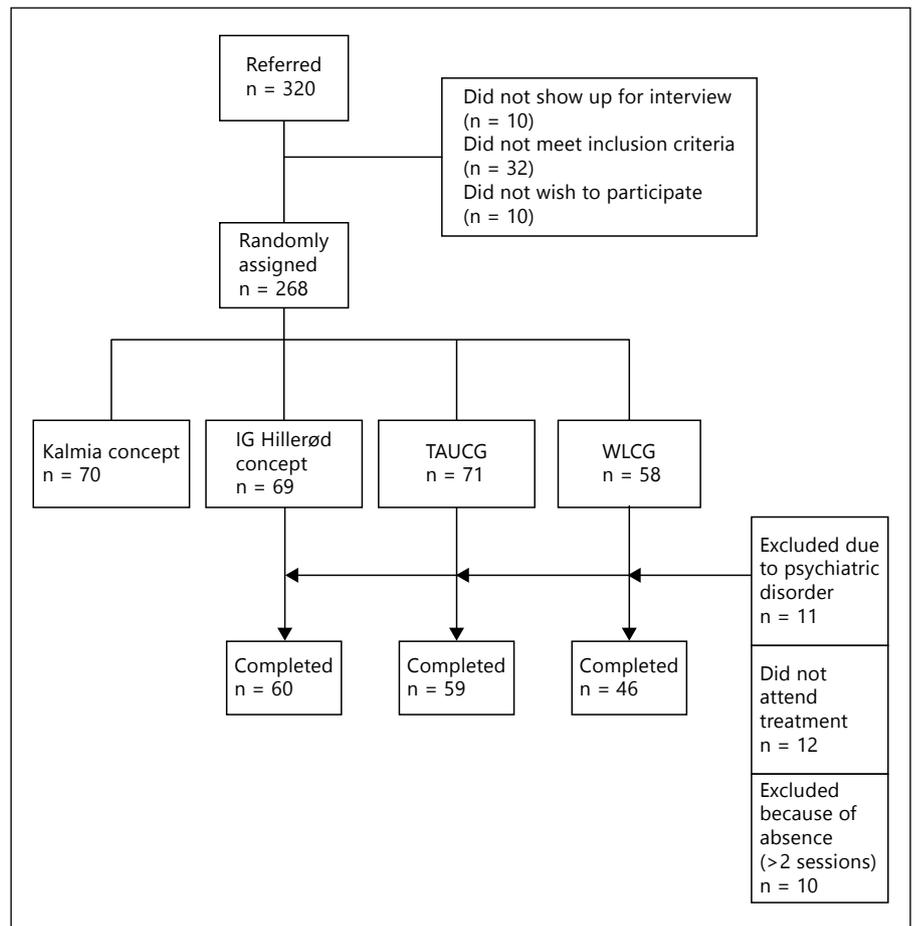
Fig. 1. Flow diagram showing participants assessed for eligibility.

interview, and a pamphlet regarding participation in a scientific project along with a written informed consent form, both of which were published by the Scientific Ethical Committee, were enclosed. We also enclosed the scientific protocol written in layman's terms.

Of the 320 persons referred, 10 people (3.1%) did not attend the assessment interview, 32 people (10%) did not fulfil the inclusion criteria primarily because of unemployment or not/no longer being on sick leave, and 10 persons (3.1%) chose not to participate (figure 1).

Thus, 268 participants (83.8%) were included in the study. They had all been actively employed for years prior to the current sick leave and had no history of long-term psychiatric treatment. Participants were randomly assigned to one of the following four groups: (1) the intervention group (IG) receiving the multidisciplinary stress treatment programme (the Hillerød concept); (2) a control group receiving treatment-as-usual (TAUCG); (3) a wait-listed control group (WLCG) being placed on a waiting list for 3 months and then receiving the same treatment as those in the IG, or (4) a treatment group receiving a group-based stress treatment programme consisting of group psychotherapy and Basic Body Awareness Therapy (BBAT). Effects of the 'Kalmia' programme are evaluated in another publication [36]. In this publication, we focus on the effects of the 'Hillerød' programme (IG) compared with the WLCG and TAUCG.

The randomisation procedure (i.e. drawing lots) was conducted by a secretary who was located at another hospital. The outcome of the draw was stated in the referral document and sent to the Bispebjerg Hospital where the assessment interview took place. Interviews of participants randomised to the WLCG were conducted by a trained medical physician or a psychologist, who was able to address any disappointments of the participants and thereby attempt to prevent biases in the responses to the questionnaires. Assessment interviews involving the other participants were conducted by psychology students. The participants were informed of their group assignment after they had agreed to enter the project and they had signed the written informed consent.

Four participants assigned to the TAUCG and 8 participants assigned to the WLCG did not attend treatment. For these participants, we were only able to collect basic data including their name, address and civil personal number.

Of the 256 participants who began treatment, 223 participants completed the treatment (87.8%). Of the 33 dropouts, 17 participants were excluded due to diagnosis of a major psychiatric disorder during the first weeks of treatment. A psychiatrist evaluated all but 2 of these participants and proposed another treatment type to the referring GP. Sixteen participants did not complete the treatment or were absent from more than two sessions and subsequently excluded.

Table 1. Characteristics of the IG, TAUCG, and WLCG at baseline

	IG	TAUCG	WLCG	All
Total participants, n	69	71	58	199
Excluded due to psychiatric disorder, n	6	3	2	11
Did not attend treatment, n	0	4	8	12
Excluded due to absences, n	3	5	2	10
Total participants who completed treatment, n	60	59	46	163
Mean age (range), years	42.5 (27–68)	44.8 (25–58)	44.8 (28–68)	44.2 (25–68)
Women, %	75.0	78.0	84.4	82.1
Married, %	62.7	59.3	65.2	62.2
Occupation, %				
Workers	30.4	25.5	11.1	22.5
Medium education	50.0	49.1	37.8	44.1
Academics	19.6	25.4	51.1	33.4
Employed in public sector, %	53.3	57.6	77.8	61.6
Full-time sick leave, %	68.3	71.2	76.1	73.1
Mean sick leave (range), days	71.1 (7–355)	64.7 (1–448)	77.9 (11–210)	70.2 (1–448)
Moderate/severe depression, %	33.9	45.5	42.2	40.3
Antidepressants, %	18.3	15.1	17.1	15.9
Mean GSI (range)	1.1 (0.1–2.3)	1.3 (0.2–2.9)	1.21 (0.1–2.7)	1.26 (0.1–2.9)
Mean WAS (range)	2.3 (0–10)	2.6 (0–9)	2.2 (0–7)	2.5 (0–10)
Mean stress index (range)	3.9 (1–5)	3.7 (1–5)	3.8 (2–5)	3.8 (1–5)

The dropouts were less likely to be female and to have a medium to long education history. They were characterised by having higher symptom levels than those completing treatment.

The aim of the randomisation was to divide participants into four equal groups. Due to lack of resources, however, it was necessary to terminate the treatments at the end of June 2011. Therefore, recruitment to the WLCG stopped in December 2010 and the size of the group consisted of only 58 patients. Recruitment to the other groups continued until April 2011. One participant was assigned to the IG but was allocated to the TAUCG in error. Thus, the final groups consisted of 69 participants in the IG and 71 participants in the TAUCG.

Six of the IG participants were excluded because they were diagnosed with a major psychiatric disorder (2 with personality disorder, 2 with severe anxiety, and 2 with long-term depression), and 3 participants did not complete treatment (table 1). Three TAUCG participants were excluded due to psychiatric illness (2 with alcohol abuse and 1 with severe depression), 4 participants did not show up for treatment, and 5 participants did not complete treatment. Two WLCG participants were excluded due to psychiatric illness (1 with personality disorder and 1 with severe depression), 8 participants did not attend treatment, and 2 participants did not complete treatment.

Intervention

The intervention programme consisted of the following: (1) eight 1-hour individual stress treatment sessions during 3 months; (2) workplace dialogue, and (3) participation in a group-based MBSR course including eight 2-hour sessions every week over 8 weeks [33].

Treatment started with an initial medical and psychological interview, and the participant was requested to complete a personality test (NEO PI-R) and undergo physiological tests. Data on the latter will be reported in other publications.

The initial interview was performed by a specialist in occupational medicine and an authorised psychologist. In this interview, the medical history, psychological strains and current symptoms of the participant were assessed. A record was written by the medical doctor and forwarded to the participant and the participant's GP. Then, the participant received eight individual stress treatment sessions, which lasted approximately 1 h and were given by either a trained psychologist or a specialist in occupational medicine. The treatment was given according to a manual developed based on experiences from the Stress Clinic in Hillerød [27].

The individual sessions focused on the following factors:
- Identification of relevant stressors both at work and at home;
- Changing the coping strategies of the participant;
- Restoring balance;
- Identifying obstacles for RTW;
- Adjustment of work load and tasks throughout the treatment;
- Gradual increases in working hours;
- Physical exercise;
- Dialogue with the workplace was advocated, but only conducted if the participant agreed;
- Assessment by a psychiatrist was requested when needed (e.g. high score on the Major Depression Inventory (MDI) or suspected personality disorder).

There was a constant focus on RTW and if the participant did not agree to a direct dialogue with the workplace, the participant's dialogue with her or his employer and workplace was addressed and supported during the sessions.

Treatment was conducted at Bispebjerg University Hospital in Copenhagen. In all, 4 specialists in occupational medicine and 5 authorised psychologists performed the treatments.

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Control Groups

TAUCG participants were offered 12 conventional, individual sessions during a 3-month period with a psychologist at one of two psychologist practices in Copenhagen. A total of 14 psychologists (7 psychologists from each practice) were involved in the project. Each psychologist treated approximately 5 participants. The treatment content varied and may have included CBT, narrative methods, and other techniques, which reflected the treatment that is currently offered to patients with stress symptoms in the Copenhagen area. This kind of treatment is not covered by National Health Insurance; therefore, the patients normally have to pay for the treatment themselves. However, often private insurance companies, or the employers, paid for the treatment.

The WLCG did not receive treatment for 3 months. However, two thirds of the participants consulted a psychologist outside of the study or consulted with their GP during the waiting period.

Data Collection

At baseline, the participants completed a questionnaire regarding demographic variables, including civil status, number of children at home, employment, employer, work hours per week, dates of sick leave, and information on medication, smoking and alcohol habits. Both at baseline and after 3 months (i.e. at the end of the treatment period for the IG and TAUCG participants, and at the beginning of the treatment period for the WLCG participants), the following questionnaires were administered and completed at home: the Symptom Check List 92 (SCL92), the MDI, the Copenhagen Psychosocial Questionnaire (COPSOQ), and a supplementary questionnaire concerning sleep quality, work ability, stress, and supplemental treatments utilized in the previous 3 months (e.g. consultations with a psychologist outside of the study, consultations with their GP, massage, yoga, etc.) [37–40]. At the end of treatment, participants and their treating psychologists jointly completed a final questionnaire that examined when sick leave had decreased or increased and whether it had stopped during treatment. Job changes and unemployment were recorded as well as information on current medication. Finally, the participant and psychologist evaluated which types of stressors were assumed to be the primary cause of the participant's stress condition and sick leave.

Outcomes
Return to Work

Sick leave status after treatment was assessed at the final session for the IG and TAUCG participants and at the first consultation for the WLCG participants. There were five of the following possible treatment outcomes: (1) working full time; (2) increased working hours; (3) unemployed but available in the labour market; (4) unemployed and on sick leave, and (5) no changes in sick leave. RTW was treated as two binary variables, which were coded in the following way: (A) *full-time work*; yes = 1 + 3, no = 2 + 4 + 5 and (B) *increased work hours* from baseline; yes = 1 + 2 + 3, no = 4 + 5. In addition, analyses were conducted that excluded those participants who were unemployed at follow-up.

Symptoms
Psychological Symptoms. Psychological symptoms were measured using the SCL92 and the MDI. The SCL92 is a 92-item self-administered questionnaire that consists of 9 subscales. The items on the scales are rated on a 5-point Likert scale, ranging from 0 (not at all) to 4 (extremely). The time frame referred to 'the past week'. The sum of all 92 items constitutes a Global Severity Index (GSI) [40] and subscales were calculated for each clinical dimension [41]. The MDI is a 12-item self-administered questionnaire. The degree of depression can be estimated from the total score or by analysing the answers according to specific criteria [39]. The degree of depression can be categorised as mild, moderate or severe according to Bech [41].

Work Ability. Work ability (work ability score, WAS) was measured by the following question: 'Assess your work ability on a scale ranging from 0 to 10, where 10 points mean that you are at your best. How do you rate your current work ability?'.

Degree of Stress. Degree of stress was measured by the following question: 'Stress means a situation in which a person feels tense, restless, nervous or anxious or is unable to sleep at night because his/her mind is troubled all the time. Do you feel this kind of stress these days?' The response was recorded on a 5-point Likert scale, ranging from 'not at all' to 'very much'. The validity of this single-item measure of stress symptoms has been evaluated by Elo et al. [42].

Statistical Analyses

We used SPSS (Statistical Package for the Social Sciences) software package version 11 to conduct the statistical analyses. Baseline characteristics were compared using the χ^2 test of comparable distributions and Student's t test. RTW rates were also compared by the χ^2 test. Logistic regression analyses were conducted to examine the main effects of group and to estimate the odds ratios (ORs) controlling for age, gender, occupation, and days of sick leave before treatment as possible confounders. Next, degree of depression, stress, WAS and the GSI were added to the model, and finally setting of employment and direct work place dialogue were added.

GSI and WAS at the end of treatment (or the beginning of treatment for the WLCG) were used as outcomes. Treatment effects were analysed using general linear models (GLM) with group being used as a between-subject factor. We controlled for age and gender in the first model, and for the dependent variable's baseline value in the second model. A third model adjusted for civil status, number of children at home, occupation, and days of sick leave before treatment, and a fourth included private or public employment. Finally, changes in SCL92 symptom scores after 3 months were analysed using paired t tests, and the between-group changes were analysed using a GLM controlling for the baseline values age and gender. Calculation of Cohen's *d* was used to estimate the effect sizes.

Results

The demographic characteristics of the participants at the time of inclusion are presented in table 1. No significant differences were found between the groups, but there were non-significant trends. The analyses revealed that participants in the WLCG generally had longer educations, were more likely to be publicly employed, and had sick leaves of longer duration prior to entering the study than the other groups. In all groups, there were significantly more women than men, and 73.1% of participants had been on full-time sick leave for an average of >2 months before entering the study. Forty percent of the

Table 2. ORs of the RTW rates after 3 months in the IG and TAUCG compared to WLCG

	Full-time work, OR (95% CI)			Increased work, OR (95% CI)		
	IG	TAUCG	WLCG	IG	TAUCG	WLCG
Adjustment factors						
Model 1	6.60 (2.7–16.0)	3.83 (1.7–8.2)	1	18.55 (3.9–88.2)	12.7 (2.7–58.9)	1
Model 2	6.82 (2.7–16.7)	3.89 (1.7–8.5)	1	19.00 (3.9–91.2)	12.79 (2.7–57.9)	1
Model 3	6.40 (2.1–19.4)	4.41 (1.6–12.1)	1	18.04 (2.8–112.1)	12.85 (2.9–69.2)	1
Model 4	8.15 (3.2–20.7)	3.53 (1.6–7.9)	1	21.27 (4.3–104.5)	10.67 (2.2–50.9)	1

Model 1 = Age and gender; model 2 = model 1 plus occupation and sick leave days before treatment; model 3 = model 2 plus depression severity, stress, and work ability rating at baseline and end of treatment; model 4 = model 3 plus employment setting in private or public sector and work place dialogue.
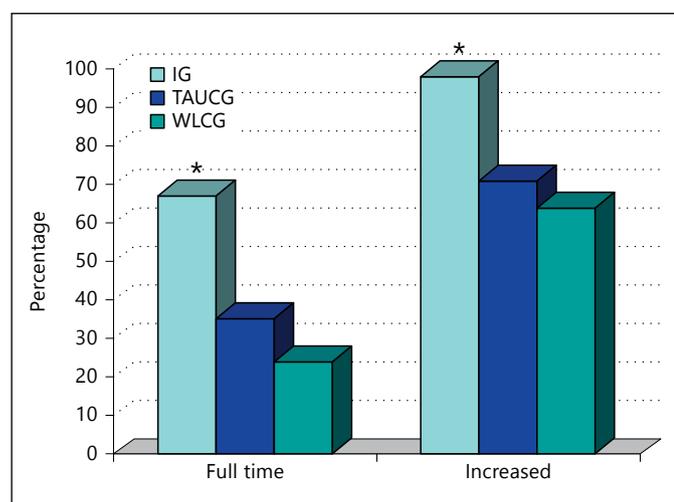
Fig. 2. RTW (percentage at work) in the IG and TAUCG after treatment and the WLCG after 3 months on a waiting list.

participants had moderate to severe depression according to their MDI score. However, only 15.9% of participants had received antidepressants.

Regarding the RTW rate, 67% of participants in the IG returned to full-time work after treatment, which was a significantly higher rate than those of the TAUCG (36%) and WLCG (24%) (figure 2). Significantly more participants in the IG (97%) increased their working hours during treatment compared with the participants in the control groups, TAUCG (71%) and WLCG (64%).

Table 2 displays the ORs of the RTW rates after 3 months. We found highly significant group differences in the ORs of full-time work resumption, which favoured the IG. Controlling for possible confounders did not af-

fect this relationship. Including the effect of the 'work place dialogue' variable did not change the estimates significantly. However, only 19 participants in the IG received direct work place dialogue, while the others preferred to address the work place themselves. After exclusion of the unemployed at follow-up, the OR for full-time work was 4.3 (1.7–10.5) and that for increased work was 10.2 (2.1–49.2) for the IG compared to the WLCG. The OR comparing the IG with the TAUCG after adjusting for age, gender, occupation, sick leave days before treatment, and GSI score was 4.8 (1.7–13.8) for full-time work after treatment and 2.3 (1.4–3.7) for increased work.

Table 3 shows the mean GSI and WAS values after 3 months in each group. No differences were found between the IG and TAUCG. The mean GSI score was significantly higher in the WLCG after 3 months of entering the study compared with the other two groups, even after controlling for relevant variables. The WAS was significantly higher in the two treatment groups after 3 months compared with the WLCG. Adjustments for potential confounders did not change the estimates much.

Finally, we found significant within-subject changes in the SCL92 symptom scores after 3 months (table 4). Analyses of between-group differences in these changes revealed no significant differences between the IG and TAUCG. However, the WLCG showed significantly smaller changes on all measures compared with the two treatment groups, except for measures of phobic anxiety and somatisation. The effect sizes assessed by Cohen's *d* were medium for anxiety (*d* = 0.50), depression (*d* = 0.50), and GSI (*d* = 0.52), but low for the other scales.

The prevalence of moderate to severe depression according to Olsen et al. [39] declined in all groups. The rates in the IG and TAUCG were 9.3 and 7.8%, respec-

Table 3. The mean GSI and WAS values for the IG, TAUCG, and WLCG after 3 months after adjusting the GLMs (95% CI)

	IG		TAUCG		WLCG	
	GSI	WAS	GSI	WAS	GSI	WAS
Adjustment factors						
Model 1	0.55 (0.4–0.7)	6.12 (5.4–6.7)	0.61 (0.6–0.8)	5.79 (5.1–6.4)	0.84 (0.7–1.0)*	4.49 (3.7–5.2)**
Model 2	0.56 (0.5–0.7)	6.12 (4.5–5.8)	0.63 (0.5–0.7)	5.71 (5.1–6.4)	0.89 (0.8–1.0)**	4.71 (4.0–5.4)*
Model 3	0.57 (0.5–0.7)	6.19 (5.5–6.8)	0.60 (0.5–0.7)	5.86 (5.1–6.5)	0.86 (0.8–1.0)**	4.82 (4.1–5.5)**

Model 1 = Age and gender; model 2 = model 1 plus the dependent variable at baseline; model 3 = model 2 plus civil status, number of children, occupation, employment setting in private or public sector, and sick leave days before treatment.
IG compared with WLCG: * p < 0.05, ** p < 0.01.

Table 4. Changes in SCL92 symptom scores in the IG and both control groups

	IG* mean (SD)	IG** mean (SE)	TAUCG** mean (SE)	WLCG** x̄(SE)	p IG/WLCG	Cohen's *d* IG/WLG
Somatisation	−0.61 (0.7)	−0.62 (0.06)	−0.77 (0.06)	−0.51 (0.07)	0.15	0.22
Anxiety	−0.63 (0.7)	−0.63 (0.07)	−0.77 (0.07)	−0.40 (0.07)	0.01	0.50
Depression	−0.82 (0.9)	−0.85 (0.09)	−0.87 (0.09)	−0.43 (0.09)	0.01	0.50
Hostility	−0.35 (0.8)	−0.50 (0.07)	−0.41 (0.06)	−0.18 (0.06)	0.01	0.25
Paranoid ideation	−0.47 (0.7)	−0.47 (0.07)	−0.52 (0.06)	−0.15 (0.06)	0.06	0.34
Obsessions	−0.82 (0.7)	−0.81 (0.07)	−0.89 (0.08)	−0.54 (0.08)	0.01	0.35
Psychoticism	−0.27 (0.5)	−0.27 (0.05)	−0.27 (0.04)	−0.15 (0.04)	0.03	0.11
Phobic anxiety	−0.33 (0.6)	−0.33 (0.06)	−0.39 (0.08)	−0.25 (0.09)	0.11	0.12
Interpersonal sensitivity	−0.54 (0.7)	−0.53 (0.07)	−0.52 (0.07)	−0.25 (0.08)	0.03	0.41
GSI	−0.63 (0.7)	−0.63 (0.07)	−0.63 (0.07)	−0.33	0.01	0.52

p values and Cohen's *d* (effect size) for the IG compared with the WLCG. * Paired t test; ** GLM after adjusting for baseline values, gender, and age.

tively, both of which were significantly lower than in the WLCG (24.4%; p < 0.04). In comparison, the depression rates at baseline were as follows: IG 33.9%; TAUCG 45.5%, and WLCG 42.2%.

Discussion

This study showed that the intervention programme group had a significantly different RTW rate compared to participants in the TAUCG and WLCG. The treatment also significantly improved symptom levels compared to no treatment.

Methodological weaknesses might have affected the results. A selection bias has most likely occurred. Specifically,

there were more low-skilled employees among the dropouts, and these participants also had more severe symptoms compared with those who completed the treatment. This bias compromises the generalisability of our results to the working population in general. Given that the participants were primarily recruited from a group of public employees with medium to long education histories (e.g. social and healthcare workers), these people were likely to be more motivated to use the type of treatment offered in this study compared with other occupational groups. A similar bias was found in another Danish RCT [43, 44]. An intention-to-treat analysis will be performed later for all enrolled participants based on the register-based data on long-term absence from work. This may help discern whether the effect in this study, particularly on the RTW

rate of the treatment program, is long-term or just an acceleration compared to treatment as usual. Other studies have shown that the effect might be temporary, resulting from legislation and administrative conditions related to compensation during sick leave [10, 18, 45].

Participants in the WLCG had relatively longer education histories in addition to longer periods of absenteeism. A possible reason is that the 8 people who did not begin treatment despite agreeing to participate were relatively less skilled and urgently required treatment because of the risk of getting fired. Therefore, this subgroup of participants may have been less willing to wait for treatment. However, with the current data, the direction of this bias is difficult to assess.

Another possible criticism is that the IG participants received more treatment (in hours) than participants in the TAUCG. However, the MBSR treatment was conducted in groups and therefore cannot be quantitatively compared. Overall, we consider the treatments to involve similar intervention volumes.

Two thirds of the WLCG participants reported that they had received some form of treatment while waiting, and we still found significant effects of the intervention relative to the WLCG, which supports the effectiveness of the intervention. That is, we could expect to find even greater differences if we were comparing the IG with a group that received no treatment at all. Thus, having a 'true' control group, which did not receive any treatment and did not wait for treatment, would have been preferable. To avoid a seasonal effect, the IG and TAUCG received treatment throughout autumn and winter of 2010. The participants in the WLCG waited during this period.

Although the participants were similar in terms of symptom levels, their diagnoses were not well defined. Referral was based on the GP's assessment of their condition. Because only 11 people were excluded due to a psychiatric illness, we assume that the referring physicians capably selected the relevant participants. The observation that no participant had a long-term history of psychiatric treatment supports this assumption. The symptom profile measured by the SCL92 showed that the participants had adjustment disorders characterised by a variety of symptoms, including significant levels of depressive symptoms.

The strengths of this study are its RCT design, the inclusion of two control groups, and the high participation rate (82%). In addition, the randomisation procedure was successful. Thus, the participants of all three groups were comparable with respect to important variables such as marital status, age, gender, sick leave status, medication status, and symptom severity.

The outcome of the randomisation procedure was known to the physician or psychologist who obtained the participant's informed consent, and this procedure might have biased the manner in which the information was given. Four TAUCG participants and 8 WLCG participants might have been influenced by this procedure because they did not attend treatment, although they fulfilled the inclusion criteria and had signed the informed consent (table 1). A more plausible explanation is that they did not attend because they preferred another form of treatment or the WLCG participants did not want to wait 3 months to receive treatment.

One might have expected to find greater improvements in symptom levels in the IG compared with the TAUCG given that the IG participants had a higher rate of full-time work resumption. The intervention treatment programme focused on workplace dialogue and RTW, which is not conventional for psychological practice, even though only a minor part of the participants received direct work place dialogue. Consequently, this focus on RTW early in treatment might explain the study effect.

Regarding SCL92 symptom levels after a 3-month period, the level of phobic anxiety, hostility, paranoid ideation, psychoticism, and interpersonal sensitivity in all treatment groups was within a normal range according to Danish norms. However, the mean levels of somatisation, depression, anxiety, and obsession were still significantly higher than average [40].

The results of this study are comparable with other studies on RCTs [16, 18, 20–21, 23–25, 44–48]. However, differences in the possibility of remaining on sick leave, the risk of losing one's job during sick leave, and the economic compensation during sick leave make comparisons of the data regarding RTW rate with different countries difficult. An increased risk of job loss or income decline should be associated with higher motivations to return to work. Compared with a Danish study that used a group-based CBT intervention [43, 44], our results concerning improvement of symptom levels are of similar effect sizes. Half of the participants in Willert et al.'s [43, 44] study were not on sick leave at baseline, implying that these participants had conditions of less severity. In addition, one inclusion criterion of the study stated that participants on sick leave were required to have a planned RTW within 4 weeks after baseline. The fact that the RTW rate in our study was greater than in Willert et al.'s [43, 44] study indicates that the focus on RTW in the stress treatment programme was essential to obtain a positive outcome.

In conclusion, this multidisciplinary stress treatment programme showed significant effects on the RTW rate

compared with both control groups. The effect of the programme on symptom reduction is comparable with the effect of different types of psychological treatments, but it shows a medium effect size compared to no treatment. The major interpretations of the results are that a combination of work place-focused psychotherapy, including counselling, and psychoeducation and MBSR is more effective in helping citizens with adjustment disorders and on sick leave to return to work earlier than clinical psychological treatment.

Disclosure Statement

The authors declare no competing interests.

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