

## Personality and Social Psychology

# A systematic review and meta-analysis of tertiary interventions in clinical burnout

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Clinical burnout is one of the leading causes of work absenteeism in high- and middle-income countries. There is hence a great need for the identification of effective intervention strategies to increase return-to-work (RTW) in this population. This review aimed to assess the effectiveness of tertiary interventions for individuals with clinically significant burnout on RTW and psychological symptoms of exhaustion, depression and anxiety. Four electronic databases (Ovid MEDLINE, PsychINFO, PubMed and CINAHL Plus) were searched in April 2016 for randomized and non-randomized controlled trials of tertiary interventions in clinical burnout. Article screening and data extraction were conducted independently by two reviewers. Pooled odds ratios (ORs) and hazard ratios (HRs) were estimated with random-effects meta-analyses. Eight articles met the inclusion criteria. There was some evidence of publication bias. Included trials were of variable methodological quality. A significant effect of tertiary interventions compared with treatment as usual or wait-list controls on time until RTW was found, HR = 4.5, 95% confidence interval (CI) = 2.15–9.45; however, considerable heterogeneity was detected. The effect of tertiary interventions on full RTW was not significant, OR = 1.33, 95% CI = 0.59–2.98. No significant effects on psychological symptoms of exhaustion, depression or anxiety were observed. In conclusion, tertiary interventions for individuals with clinically significant burnout may be effective in facilitating RTW. Successful interventions incorporated advice from labor experts and enabled patients to initiate a workplace dialogue with their employers.

**Key words:** Clinical burnout, exhaustion, tertiary interventions, return-to-work, systematic review, meta-analysis.

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### INTRODUCTION

Stress-related psychological ill-health is the leading cause of work absenteeism in the Organisation for Economic Co-operation and Development (OECD) countries (OECD, 2012, 2013). The estimated cost of work-related stress in the European Union approximates €20 billion annually (European Agency for Safety and Health at Work, 2014). Notwithstanding a few important conceptual dissimilarities, most available definitions of “burnout” highlight exhaustion as a core symptom (see Grossi, Perski, Osika & Savic, 2015 for a review of different conceptualisations of burnout). It has been proposed that a distinction should be made between a milder form of burnout, which implicates symptoms that do not fully incapacitate the employee, and “clinical burnout,” which implies clinically significant exhaustion and impaired work performance, which motivates professional care-seeking (Schaufeli, Bakker, Hoogduin, Schaaap & Kladler, 2001). The present review focuses on “clinical burnout” as defined by Schaufeli and colleagues (2001).

Due to the large organisational and societal costs of stress-related work absenteeism, there is a great need to identify interventions that are effective in increasing return-to-work (RTW) in this population. Tertiary interventions refer to interventions that focus on the treatment of individuals who fulfill the diagnostic criteria for stress-related disorders and the facilitation of RTW, as opposed to primary or secondary interventions, which focus on the prevention of disease incidence

and progression, respectively (Maslach & Goldberg, 1998). Tertiary interventions may be delivered at the individual or organisational level. While individual-level interventions typically include elements of cognitive behavioural therapy (CBT), relaxation training, meditation or physical activity, organisational interventions typically focus on organisational re-structuring and leadership training (Maslach & Goldberg, 1998).

Although not empirically explored, it may be hypothesized that the effect of tertiary interventions on RTW is mediated by reduced symptoms of exhaustion, depression and/or anxiety. Whether or not depression and anxiety should be regarded as symptoms or correlates of clinical burnout is disputed in the literature (Åsberg, Nygren & Nager, 2013; Bianchi, Sam & Laurent, 2015; Leiter & Durup, 1994; Richardsen, Burke, Leiter *et al.*, 1992); however, elevated levels of depression and anxiety are often reported in this patient group (Åsberg *et al.*, 2013; Bianchi *et al.*, 2015; Richardsen *et al.*, 1992). Although the direction of influence is yet to be determined (e.g., depression and anxiety may predispose individuals to develop clinical burnout, or clinical burnout may itself give rise to depression and anxiety), these conditions are themselves implicated in stress-related work absenteeism (OECD, 2012, 2013) and hence, merit investigation in RTW interventions.

Existing reviews of tertiary interventions have typically not focused solely on clinical burnout. For example, Franche and colleagues conducted a systematic review to assess the effectiveness of workplace interventions for individuals on sick-

leave due to musculoskeletal or other pain-related conditions. They found that time until RTW was significantly reduced in interventions that provided work accommodation offers, contact between healthcare provider and workplace, ergonomic worksite visits and the presence of an RTW coordinator (Franché *et al.*, 2005). Another review of interventions for different kinds of work disabilities (e.g., musculoskeletal disorders, clinical burnout) was unable to draw any conclusions regarding the effect on work absenteeism due to the scarcity of studies (van Oostrom, Driessen, De Vet *et al.*, 2009).

On the other hand, existing reviews of interventions for clinical burnout have not included or were unable to estimate effects on RTW. For example, Montano, Hoven and Siegrist (2014) assessed the effectiveness of organisational-level workplace interventions on employees' health (e.g., ischemic heart disease risk, clinical burnout, back pain) but did not focus on time until RTW. Richardson and Rothstein (2008) conducted a meta-analysis of the effectiveness of stress-management interventions in occupational settings but did not assess time until RTW. A recently published systematic review of tertiary interventions for individuals with a diagnosis of burnout was unable to assess the pooled effect of interventions on RTW due to an insufficient sample size (Ahola, Toppinen-Tanner & Seppänen, 2017).

As clinical burnout is one of the main causes of work absenteeism in high- and middle-income countries, there is a great need for studies that identify effective intervention strategies. Therefore, the primary aim of this review was to systematically review the literature to assess the effect of tertiary interventions for individuals with clinical burnout on RTW. A secondary aim was to assess the effectiveness of these interventions on psychological symptoms of exhaustion, depression and anxiety.

## METHODS

### *Criteria for considering studies for this review*

*Types of studies.* Randomized controlled trials (RCTs) and non-randomized controlled trials with a matched control group were considered for inclusion. Studies had to be written in English.

*Types of participants.* Studies that recruited adults aged 18 years or over with a diagnosis of clinical burnout, exhaustion disorder, adjustment disorder or a stress-related mental disorder were included. No upper age limit was imposed.

*Types of interventions.* We included trials that compared a 'psychosocial intervention' for stress-related mental disorders or clinical burnout, delivered either individually or in groups, with a wait-list control or treatment as usual (TAU). A 'psychosocial intervention' is defined here as any intervention focusing on psychological (e.g., health education, coping skills, mental relaxation) or social factors (e.g., social skills training) as opposed to biological factors, such as medication (Ruddy & House, 2005). Studies with follow-up assessments conducted within 24 months' post-intervention were considered for inclusion. Where more than two intervention groups were compared, individual as opposed to group-based treatments were favoured, as were wait-list controls as opposed to TAU.

*Types of outcome measures.* The primary outcome was return-to-work (RTW), operationalized as days until RTW (i.e., continuous variable) or full RTW at follow-up (i.e., categorical variable). Secondary outcomes included: (1) exhaustion, as measured by self-report or observational scales such as the Maslach Burnout Inventory-General Survey (MBI-SG; Schutte, Toppinen, Kalimo & Schaufeli, 2000) or the Shirom-Melamed Burnout Questionnaire (SMBQ; Shirom & Melamed, 2006); (2) depression, as measured by self-report or observational scales such as the Hospital Anxiety and Depression Scale (HADS; Bjelland, Dahl, Haug & Neckelmann, 2002; Zigmond & Snaith, 1983); and (3) anxiety, as measured by self-report or observational scales such as the HADS.

### *Search methods for identification of studies*

*Electronic searches.* The following electronic databases were searched in April 2016: MEDLINE (via Ovid), PsychINFO (via Ovid), PubMed and CINAHL Plus. No limitations regarding time frame were applied. Free text or index terms (e.g., Medical Subject Headings) were searched for in titles and abstracts (see Supplementary Material 1). Due to the lack of consensus regarding the terminology used to describe the diagnosis of interest, we used a broad range of search terms including "clinical burnout," "exhaustion disorder," "adjustment disorder" and "stress-related mental disorder" to increase the possibility of finding all relevant trials on the topic.

*Other sources.* Additional articles of interest were identified through expertise within the review team and through backward and forward reference chaining (Centre for Reviews and Dissemination, 2008).

### *Data collection and analysis*

*Selection of studies.* Identified articles were merged using EndNote X7 (Thomson Reuters, 2013) to ensure consistency. Duplicate records were removed. Two reviewers independently screened: (1) titles; (2) abstracts and (3) full texts against the eligibility criteria (The Cochrane Collaboration, 2011). Any disagreements were resolved through discussion, and through consulting a third reviewer if necessary.

*Data extraction and management.* Data on study setting, study design, sample characteristics, intervention content, intervention duration, intervention intensity and outcome measures were independently extracted by two reviewers. Any disagreements were resolved through discussion, and through consulting a third reviewer if necessary.

*Assessment of risk of bias in included studies.* The methodological quality of included studies was assessed using the Cochrane Collaboration's tool for assessing risk of bias (The Cochrane Collaboration, 2011), which recommends assessing the following domains: sequence generation and allocation concealment (selection bias), blinding of participants and providers (performance bias), blinding of outcome assessors (detection bias), incomplete outcome data (attrition bias), selective outcome reporting (reporting bias) and other sources of bias.

*Publication bias.* Data from the included studies were entered into a funnel plot, plotting the size of studies against their respective effect sizes, to assess the possibility of publication bias (Egger, Davey Smith, Schneider & Minder, 1997).

#### *Measures of treatment effect*

*Data synthesis.* Review Manager 5.0. (The Nordic Cochrane Centre: The Cochrane Collaboration, 2008) was used for the data synthesis. For binary outcomes (i.e., RTW at follow-up), the Mantel-Haenszel method for calculating odds ratios (ORs) was used. For time-to-event data (i.e., days until RTW), the O-E method for calculating hazard ratios (HRs) was used. For continuous outcomes (i.e., exhaustion, depression, anxiety), the weighted mean difference (WMD) or standardized mean difference (SMD) was calculated, as appropriate. The SMD was calculated when outcomes had been measured using different scales. Where intention-to-treat (ITT) data were not available, data from complete-case analyses were used. Where outcomes had been measured more than once, data from the longest follow-up assessment were used.

*Assessment of heterogeneity.* Statistical heterogeneity was assessed using the  $I^2$  statistic, which assesses the proportion of variance between studies caused by clinical and methodological differences, as opposed to that caused by chance (The Cochrane Collaboration, 2011). While clinical heterogeneity may arise from sources such as different intervention content and duration, different treatment settings, and group versus individual treatment, methodological heterogeneity may arise from sources such as different study designs.

## RESULTS

### *Description of studies*

A total of 301 published articles were identified through the literature search. After removing duplicates, 244 articles remained for screening. Of the 16 full-texts screened, eight met the inclusion criteria and were included in the quantitative synthesis (see Fig. 1).

### *Study and participant characteristics*

All of the reviewed studies were conducted in Northern Europe (i.e., the Netherlands, Denmark, Sweden) and included a total of 1,192 participants (see Table 1). The average age of participants ranged from 39.5 to 46.0 years (see Table 2). In most studies, females were overrepresented. The study by Blonk, Brenninkmeijer, Lagerveld and Houtman (2006) was an exception with more men than women participating. Participants were moderately to highly educated (i.e., post-16 qualifications or above). The majority of studies were conducted in a primary care setting, with the exception of Stenlund, Ahlgren, Lindahl *et al.* (2009) and Willert, Thulstrup and Bonde (2011), which were conducted in a secondary care setting. Five studies employed an RCT design with either two (Stenlund *et al.*, 2009; Willert *et al.*, 2011) or three (Blonk *et al.*, 2006; de Vente, Kamphuis, Emmelkamp & Blonk, 2008; Netterstrøm, Friebel & Ladegaard,

2013) treatment arms. One study used a cluster-RCT design with two arms (Bakker, Terluin, van Marwijk *et al.*, 2007). The remaining two studies used a non-randomized controlled trial design with a matched control group (Eklund & Erlandsson, 2011; Lander, Friche, Tornemand, Andersen & Kirkeskov, 2009).

### *Intervention characteristics and effects*

Although all of the included studies compared a tertiary intervention with TAU or a wait-list control, the content of interventions varied extensively (see Table 2). Commonly employed intervention components included psychoeducation (Blonk *et al.*, 2006; de Vente *et al.*, 2008; Lander *et al.*, 2009; Stenlund *et al.*, 2009; Willert *et al.*, 2011), relaxation and mindfulness training (Blonk *et al.*, 2006; de Vente *et al.*, 2008; Netterstrøm *et al.*, 2013; Stenlund *et al.*, 2009), time management training (Blonk *et al.*, 2006; de Vente *et al.*, 2008) and the development of coping strategies (Netterstrøm *et al.*, 2013; Stenlund *et al.*, 2009). Four studies explicitly stated that their intervention was based on CBT (Blonk *et al.*, 2006; de Vente *et al.*, 2008; Stenlund *et al.*, 2009; Willert *et al.*, 2011). Less commonly reported intervention components included assertiveness skills training (de Vente *et al.*, 2008), advice from labor experts (Blonk *et al.*, 2006) and the enablement of a workplace dialogue (Netterstrøm *et al.*, 2013). The support provided to control groups varied or was not reported; participants were typically offered a limited number of face-to-face meetings with a general practitioner (GP) or an occupational therapist (Bakker *et al.*, 2007; Blonk *et al.*, 2006; de Vente *et al.*, 2008; Eklund & Erlandsson, 2011).

The duration and intensity of interventions also varied extensively. In the study by Bakker *et al.* (2006), patients received a brief intervention whenever they visited their GP. No superior effect of the brief intervention on RTW was detected. Patients in the studies by Blonk *et al.* (2006) and de Vente *et al.* (2008) were offered 11 and 12 sessions, respectively. Although a significant effect on RTW was observed in Blonk *et al.* (2006), no significant group differences were detected in de Vente *et al.* (2008). Patients in the study by Lander *et al.* (2009) were offered 4–5 treatment sessions. A non-significant effect on full RTW was observed. In the study by Eklund and Erlandsson (2011), patients were offered two weekly 2.5-hour sessions over a period of 10 weeks, followed by a 6-week work placement. A superior effect on full RTW was observed. In the study by Netterstrøm *et al.* (2013), patients were offered eight sessions over a period of 12 weeks in addition to 8 sessions of mindfulness training. Similarly, the study by Willert *et al.* (2011) offered patients eight sessions over a period of 12 weeks. A significant effect on full RTW was detected in both Netterstrøm *et al.* (2013) and Willert *et al.* (2011). In contrast, the study by Stenlund *et al.* (2009) offered patients 30 sessions over a period of 12 months in addition to weekly Qigong sessions for 12 months. No significant differences between treatment groups were detected.

### *Publication bias*

Funnel plots with 95% confidence intervals (CIs) for the two meta-analyses conducted are depicted in Fig. 2. Due to the limited number of studies, it is not possible to draw any firm

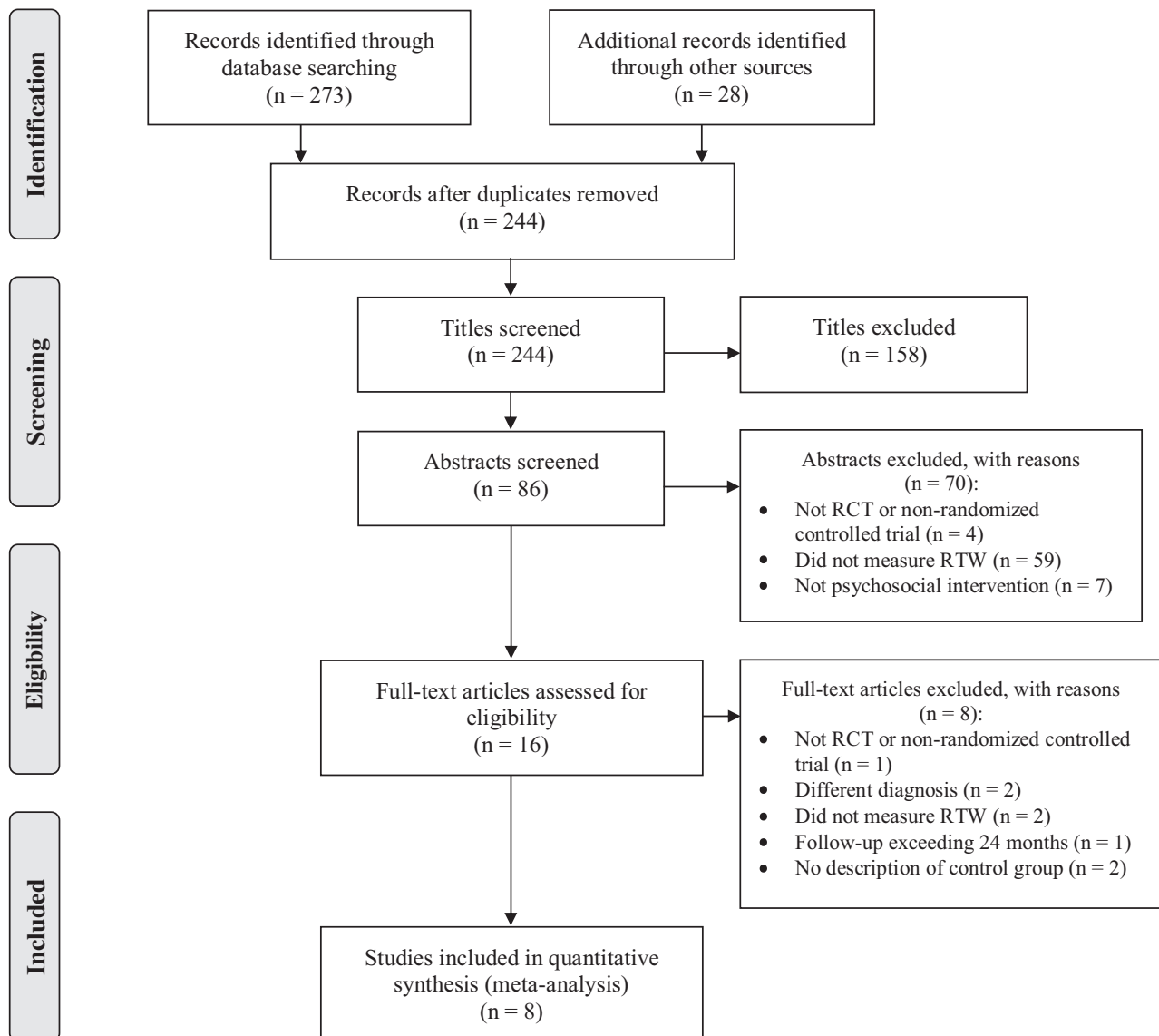


Fig. 1. PRISMA flow diagram of study selection process (Moher, Liberati, Tetzlaff & Altman, 2009).

conclusions regarding publication bias. However, both plots show some asymmetry, suggesting that studies reporting statistically significant treatment effects might have been favoured over studies with non-significant results.

#### Study quality

Several of the quality domains were rated as unclear across the included studies due to a lack of clarity in the reporting. Five of the included studies were rated as having low risk of bias with regards to random sequence generation. Allocation concealment was generally unclear or at high risk of bias, as was blinding of both participants/personnel and outcome assessors. Evidence of selective reporting was identified in three of the included studies (see Fig. 3).

#### Study outcomes

**Full return-to-work.** A random-effects model of studies comparing a tertiary intervention with TAU or a wait-list control

did not find a significant effect on full RTW, odds ratio (OR) = 1.33, 95% CI = 0.59–2.98 (see Fig. 4). Significant heterogeneity was found in this analysis,  $I^2 = 69%$ ,  $\chi^2(3) = 9.54$ ,  $p = 0.02$ .

**Time until return-to-work.** A random-effects meta-analysis found a significant effect of tertiary interventions on time until RTW compared with TAU or wait-list controls, hazard ratio (HR) = 4.5, 95% CI = 2.15–9.45 (see Fig. 5). However, significant heterogeneity was detected in this analysis,  $I^2 = 94%$ ,  $\chi^2(3) = 49.49$ ,  $p < 0.001$ .

#### Secondary outcomes

**Exhaustion** Three studies assessed the effect of a tertiary intervention on exhaustion, a diagnostic criterion for clinical burnout. None of the studies found a significant effect, SMD =  $-0.15$ , 95% CI =  $-0.40$ – $0.10$  (see Fig. 6). As the aggregated sample size was small, the power to detect an effect was limited.

Table 1. Summary of study characteristics

Authors	Country	Setting	Sample	Design	Follow-up	Main findings
Bakker <i>et al.</i> (2007)	The Netherlands	Primary care	Patients with stress-related mental disorder (N = 433)	Cluster-RCT with two groups: (1) treatment as usual (TAU); (2) a minimal intervention for stress-related mental disorders delivered by GPs.	2, 6, 12 months	No superior effect of the minimal intervention was observed.
Blonk <i>et al.</i> (2006)	The Netherlands	Primary care/workplace	Patients with work-related psychological complaints (N = 82)	RCT with three groups: (1) TAU (i.e., two brief sessions with a general practitioner); (2) individual intervention delivered by psychotherapists; (3) individual intervention plus advice from labor experts.	4, 10 months	A significant effect of the combined intervention on full RTW was found.
de Vente <i>et al.</i> (2008)	The Netherlands	Primary care	Patients with work-related stress complaints and symptoms of neurasthenia (N = 54)	RCT with three groups: (1) TAU (i.e., regular meetings with occupational therapist/general practitioner or a maximum of five sessions with psychologist/social worker); (2) a group-based stress management intervention delivered by a psychologist; (3) an individual stress management intervention.	4, 7, 10 months	No significant differences between groups were detected.
Eklund and Erlandsson (2011)	Sweden	Primary care	Patients with stress-related disorders (N = 84)	Non-randomized controlled trial with a matched control group: (1) a matched comparison group selected from the Social Insurance Office's (SIO) registry who received TAU (e.g., follow-up meetings with SIO representative, contact with employer, additional support); (2) a group-based intervention delivered by occupational therapists plus a 6-week work placement.	6, 12 months	A superior effect of the group-based intervention on full RTW was observed.
Lander <i>et al.</i> (2009)	Denmark	Primary care	Patients with stress-related disorders (N = 161)	Non-randomized controlled trial with a matched control group: (1) TAU and (2) individual consultation with a trained psychologist and a social worker.	17 months	No significant effect of the intervention on full RTW was observed.
Netterstrøm <i>et al.</i> (2013)	Denmark	Primary care	Patients with stress symptoms (N = 140)	RCT with three groups: (1) wait-list control group; two thirds of participants reported consulting with a psychologist or general practitioner during the waiting period; (2) TAU; (3) an individual stress management intervention plus a mindfulness-based stress reduction (MBSR) course delivered in groups.	Post-intervention	A significant effect of the intervention on full RTW was observed.
Stenlund <i>et al.</i> (2009)	Sweden	Stress clinic/university hospital	Patients with stress-related disease and burnout (N = 136)	RCT with 2 groups: (1) qigong and work rehabilitation support; (2) a group-based cognitively oriented behavioural rehabilitation programme.	6, 12 months	No significant difference in treatment efficacy between groups was observed.
Willert <i>et al.</i> (2011)	Denmark	Stress clinic/university hospital	Patients with work-related stress (N = 102)	RCT with 2 groups: (1) wait-list control group; (2) a group-based stress management intervention delivered by psychologists.	4, 8, 12 months	A superior effect of the intervention on full RTW was observed.

Table 2. Summary of participant and intervention characteristics

Authors	Participant characteristics			Intervention characteristics	
	Mean age in years (SD)	Female (%)	Level of education (%)	Content	Duration & Intensity
Bakker <i>et al.</i> (2007)	I: 41.97 (8.8); C: 39.5 (9.6)	I: 55%; C: 65%	I: low = 26%, intermediate = 42%, high = 31%; C: low = 22%, intermediate = 50%, high = 28%	Advice on the content of functional rehabilitation.	Whenever participating patients visited their GP
Blonk <i>et al.</i> (2006)	42.0 (7.9)	19%	Low = 26%, intermediate = 40%, high = 15%	(ii) Individual stress management intervention based on CBT, focusing on psychoeducation on work stress, registration of symptoms and situations, relaxation and time management; (iii) A combination of the individual stress management intervention and advice from labor experts on how to lower the workload and job demands and increase decision latitude.	11 sessions
de Vente <i>et al.</i> (2008)	I: 41.6 (9.4); C: 40.9 (9.6)	I: 39%; C: 35%	–	(ii) A group-based stress management intervention based on CBT. Specific techniques included psychoeducation, cognitive restructuring, time management, assertiveness skills, relapse prevention and progressive muscle relaxation; (iii) An individual version of the same stress management intervention.	12 1-hour sessions
Eklund and Erländsson (2011)	I: 45.0 (19.0); C: 46.0 (9.0)	I: 100%; C: 100%	I: university degree = 40%; C: university degree = 51%	A group-based intervention focusing on occupational self-analysis, goal setting and strategies for accomplishing desired changes in the patterns of everyday activities, in addition to a work placement. The intervention highlighted patients' total pattern of daily activities and the balance between these.	Two 2.5-hour sessions per week for 10 weeks; a 6-week work placement
Lander <i>et al.</i> (2009)	I: 42.9 (8.6); C: 43.1 (8.4)	I: 80.6%; C: 83.2%	I: low = 58.3%; C: low = 52.8%	Individual intervention focusing on psychoeducation and problem-solving.	4–5 sessions
Netterström <i>et al.</i> (2013)	44.2 (range = 25–68)	82.1%	Intermediate = 44%	An individual stress management intervention focusing on the identification of stressors at work and at home, coping strategies, restoring balance, identifying obstacles for RTW and gradual increase in working hours. In addition to this, a workplace dialogue was advocated. Patients were also offered a group-based mindfulness-based stress reduction (MBSR) course.	Eight 1-hour sessions spread over 12 weeks; eight weekly 2-hour MBSR sessions
Stenlund <i>et al.</i> (2009)	I: 40.9 (7.1); C: 42.3 (7.8)	I: 73%; C: 68%	I: university degree = 52%; C: university degree = 48%	A group-based cognitively oriented behavioural rehabilitation programme focusing on psychoeducation, self-talk, development of behavioural/cognitive/emotional skills and spiritual issues and life values. In addition to this, patients were offered a course in Qigong, which focused on balance, breathing, relaxation and mindfulness meditation.	30 3-hour sessions spread over 12 months; Qigong once weekly for 12 months
Willert <i>et al.</i> (2011)	I: 44.0 (range = 28–61); C: 46.0 (range = 24–58)	I: 80.4%; C: 84.3%	I: short = 35.3%, medium = 54.9%, long = 9.8%; C: short = 27.5%, medium = 56.9%, long = 13.7%	A group-based CBT-based stress management intervention focused on psychoeducation, identifying and modifying dysfunctional thinking, communication skills training and implementing strategies at work.	Eight 3-hour sessions spread over 12 weeks

Note: I = intervention; C = control

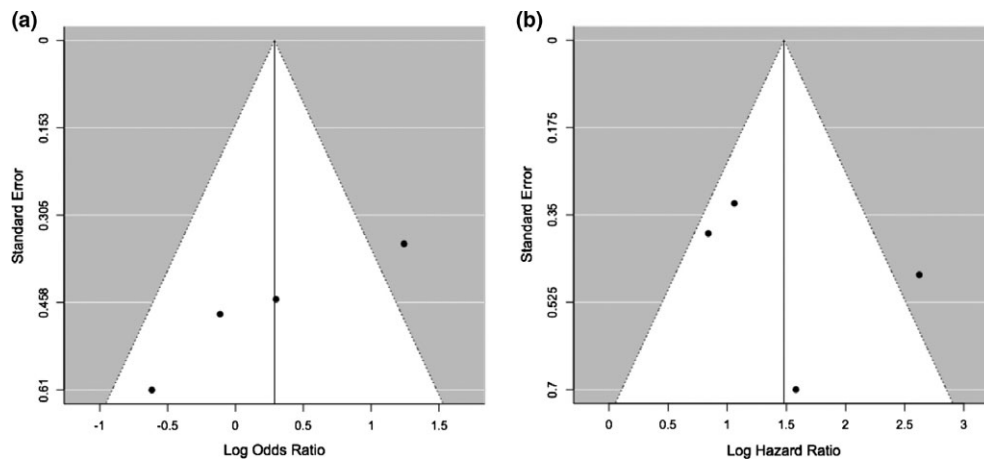


Fig. 2. Funnel plots of studies included in the meta-analysis. Panel a) displays studies assessing the effect of tertiary interventions on full RTW (n = 4); panel b) displays studies assessing the effect of tertiary interventions on time until RTW (n = 4).

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Bakker 2007	+	+	+	?	?	?	+
Blonk 2006	?	?	?	?	?	?	?
de Vente 2008	+	?	?	?	+	?	?
Eklund 2011	-	-	-	-	?	-	?
Lander 2009	-	-	-	-	-	?	?
Netterström 2012	+	-	-	?	+	-	?
Stenlund 2009	+	?	?	?	+	?	?
Willert 2009	+	+	?	?	?	-	?

Fig. 3. Summary of the included studies' risk of bias. Plus signs denote low risk of bias, minus signs denote high risk of bias and question marks denote unclear risk of bias.

**Depression.** Four studies assessed the effect of a tertiary intervention on symptoms of depression. None of the studies found a significant effect of the intervention compared with TAU or a wait-list control, SMD = -0.12, 95% CI = -0.27-0.02 (see Fig. 7).

**Anxiety.** Four studies assessed the effect of a tertiary intervention on symptoms of anxiety with none of the studies detecting a significant effect, SMD = -0.07, 95% CI = -0.23-0.08 (see Fig. 8).

DISCUSSION

The purpose of this systematic review and meta-analysis was to summarize and evaluate literature on the effectiveness of tertiary interventions for individuals with clinically significant burnout on RTW and psychological symptoms. The effectiveness of interventions was operationalized in terms of days until RTW or full RTW, and a reduction in symptoms of exhaustion, anxiety and depression. A significant effect of tertiary interventions, as compared with TAU or wait-list controls, in facilitating days until RTW was observed. However, this finding should be interpreted with caution due to the detection of significant heterogeneity. No significant effect of interventions was found in terms of full RTW. Contrary to our expectations, all studies showed that any reduction in psychological symptoms was comparable across conditions, irrespective of treatment assignment. Although it might be predicted that interventions focusing on RTW should also alleviate psychological symptoms, the available data do not appear to support this notion.

Clinical observations suggest that patients with clinical burnout are often perfectionistic, intensely ambitious, overly committed to work and other chores and tend to relapse if their behavioral patterns remain unaltered (Maslach, Schaufeli & Leiter, 2001). To achieve successful RTW, patients must adopt behaviors that facilitate the balance between activity and restitution, as well as those that help to maintain a reasonable total workload. To this end, the involvement of employers and labor experts is particularly important, especially with regards to the modification of work-related tasks and a gradual increase in working hours. In

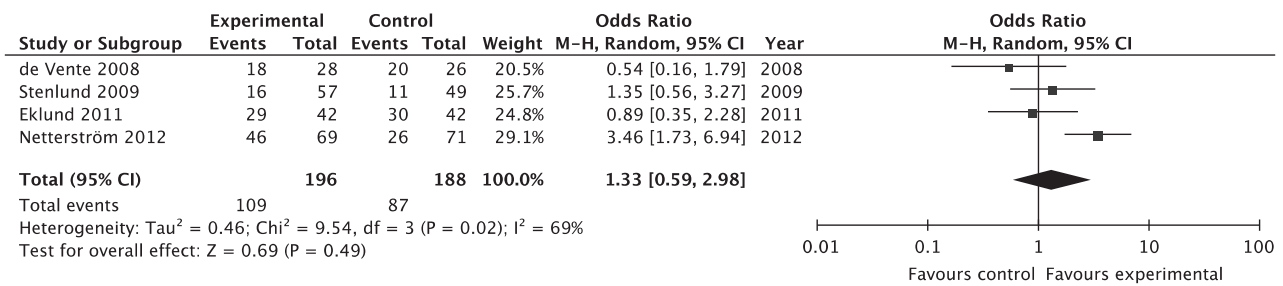


Fig. 4. Meta-analysis of studies comparing the effect of a tertiary intervention with TAU or a wait-list control on full RTW for individuals with clinical burnout. Forest plot of ORs of full RTW in each study and total OR for all studies.

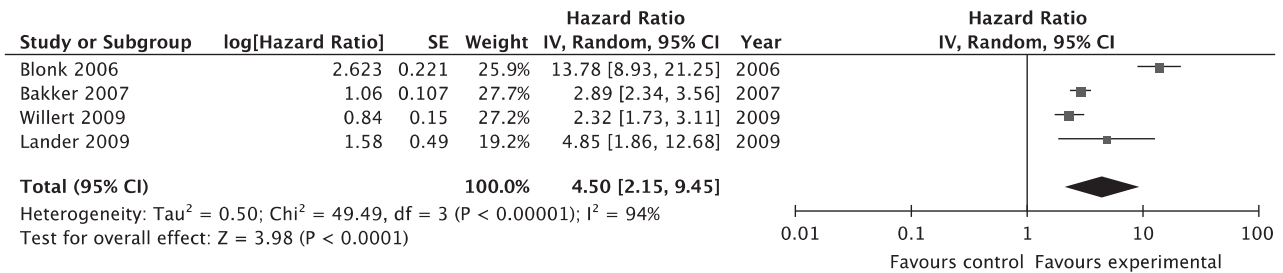


Fig. 5. Meta-analysis of studies comparing the effect of a tertiary intervention with TAU or a wait-list control on time until RTW for individuals with clinical burnout. Forest plot of HRs of time until RTW in each study and total HR for all studies.

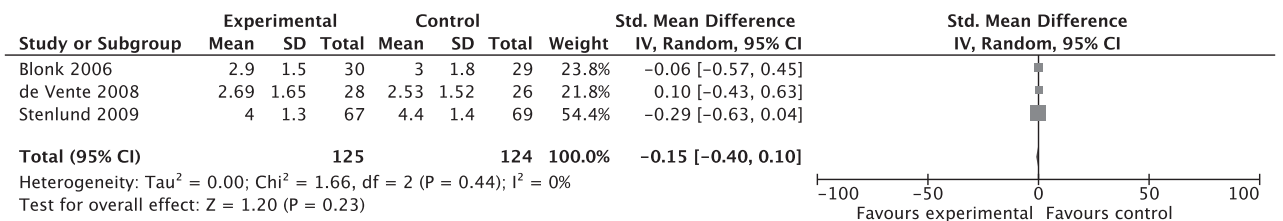


Fig. 6. Meta-analysis of studies comparing the effect of a tertiary intervention with TAU or a wait-list control on exhaustion for individuals with clinical burnout. Forest plot of SMDs of exhaustion in each study and total SMD for all studies.

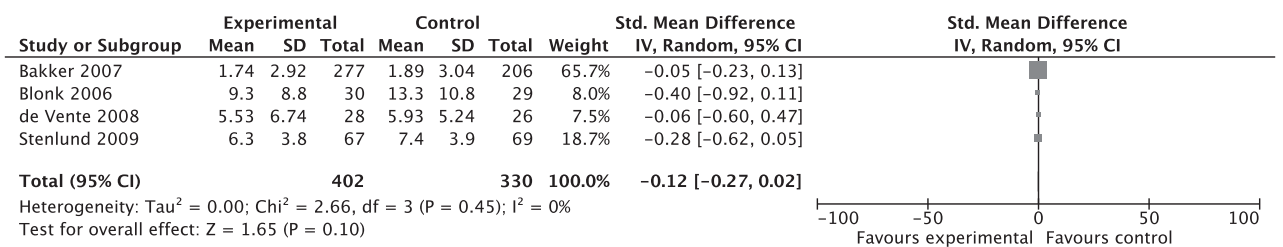


Fig. 7. Meta-analysis of studies comparing the effect of a tertiary intervention with TAU or a wait-list control on depression for individuals with clinical burnout. Forest plot of SMDs of depression in each study and total SMD for all studies.

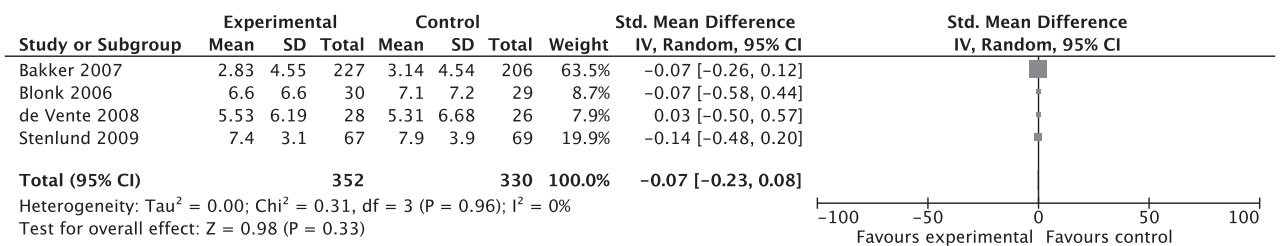


Fig. 8. Meta-analysis of studies comparing the effect of a tertiary intervention with TAU or a wait-list control on anxiety for individuals with clinical burnout. Forest plot of SMDs of anxiety in each study and total SMD for all studies.



line with this, Blonk *et al.* (2006) and Eklund and Erlandsson (2011) found that advice from labor experts and gradual training in the workplace significantly increased rates of RTW. The intervention by Netterstrøm *et al.* (2013) did not only include stress management techniques, but also included dialogue with the employer and job redesign when needed. Tangible help with the planning of and gradual introduction to the resumption of work under the supervision of labor experts may thus be an effective intervention strategy. However, Willert *et al.* (2011) demonstrated successful RTW without explicitly using such methods. In their study, which aimed to increase patients' capacity to manage work stressors and stay active despite the presence of stress symptoms, participants were trained by psychologists to use CBT techniques (i.e., psychoeducation, modification of thinking patterns) in the work setting. Since approximately 50% of participants in this study was working to some extent, patients had the opportunity to practice their new coping skills in the workplace between therapy sessions. It is hence possible that the acquisition of new skills (e.g., stress management, activity pacing) may facilitate RTW if patients have the opportunity to practice implementing these in the work setting. In the study by Eklund and Erlandsson (2011), female patients on sick-leave due to stress-related disorders were trained to redesign daily occupations, a method that includes elements of pacing, planning of activities and restitution, and that is applied holistically to an individual's total pattern of daily activities. Using this method, intervention participants achieved greater balance between activities and restitution, both at work and in the private sphere, and were better able to resume work.

A lack of difference in symptom reduction across treatment arms has been observed in other intervention studies within this patient population (Netterstrøm *et al.*, 2013; Perski & Grossi, 2004). One possible explanation is that patients allocated to control groups spontaneously seek complementary treatment during the control period. For example, in the study by Netterstrøm *et al.* (2012), as many as two thirds of participants in the wait-list control group sought help from psychologists or physicians during the wait-list period. Similar observations have been made by others: in a Swedish study, 29 of 40 patients (73%) on the waiting list sought external treatment during the control period, thus improving their SMBQ scores to levels comparable with those in the intervention arm (Perski & Grossi, 2004). As the natural course of clinical burnout is largely unexplored, it is currently unclear whether improvements observed in control groups may be reflective of spontaneous remission. However, as exhaustion disorder and adjustment disorder (which are conceptually equivalent to clinical burnout) are considered to be chronic conditions, spontaneous remission within a few weeks without treatment is thus unlikely. Consistent with this argument, the 11 control patients in the study by Perski and Grossi (2004) who did not seek additional treatment did not exhibit significant change in their SMBQ scores over time. The extent to which control participants seek external treatment should thus be monitored, and statistically adjusted for, in future intervention studies within this patient population.

Another possible explanation for the lack of a difference in symptom reduction across intervention arms might be due to the presence of effective techniques in the TAU control conditions;

additional techniques employed in the intervention conditions may not have contributed to greater reductions in psychological symptoms. Finally, follow-up periods of sufficient length may be required for effects of interventions to become apparent. For example, Stenlund *et al.* (2009) did not detect any significant differences in psychological symptoms between patients randomized to Qigong and CBT versus Qigong alone at either 6- or 12-month follow-up. However, at a 3-year follow-up, participants in the combined intervention reported significantly decreased symptoms of burnout and higher rates of perceived recovery. They also reported greater use of cognitive techniques from the programme and decreased use of antidepressants in comparison with participants in the control condition (Stenlund, Nordin & Järholm, 2012).

It may also be argued that the assessment of psychological symptoms alone is an insufficient measure of intervention effectiveness. Clinical observations indicate that whilst many patients are able to return to work and live reasonably active lives despite residual symptoms of exhaustion, others become incapacitated at an equivalent or even lower symptom load (Perski & Grossi, 2004). Hence, the extent to which individual differences in symptom perception and adaptation influence RTW and the ability to lead an active life constitutes an important avenue for future research.

The present review has several strengths. The search strategy, article screening, data extraction and data synthesis were guided by recommendations from the Cochrane Collaboration (2011). Study quality was determined based on key aspects of methodological rigour (e.g., concealed treatment allocation, blinded assessors). This is an important consideration, as studies affected by methodological biases may exaggerate treatment effects. We also explored the possibility of publication bias through the generation of funnel plots, which indicated that studies reporting statistically significant treatment effects might have been favoured over studies with non-significant results. However, due to the small number of included studies, we did not formally assess publication bias through, for example, a rank correlation test. We can hence not eliminate the subjectivity inherent in the visual inspection of funnel plot asymmetry (Lau, Ioannidis, Terrin, Schmid & Olkin, 2006).

This review also has several limitations. The small number of studies eligible for inclusion did not allow us to perform sensitivity analyses of the differential effectiveness of intervention subtypes. Further research is needed to identify specific intervention components (e.g., employer support, cognitive restructuring) that are effective in facilitating RTW. In addition, the extent to which treatment intensity (i.e., number of sessions per week), duration (i.e., total length of treatment), delivery mode (i.e., individual versus group treatment) and who the intervention is delivered by (e.g., a trained psychologist versus a GP) may influence outcomes constitute important avenues for future research. Another limitation of this review is the lack of reporting of concurrent treatment amongst control group participants in the included studies. We are currently unable to rule out the possibility that additional, unreported support was sought by a significant proportion of control group participants and hence, that this may have affected effect sizes. Another potential limitation concerns the search strategy used; due to the lack of consensus

regarding the terminology surrounding the diagnosis of interest, we used a broad range of search terms including 'clinical burnout', 'exhaustion disorder', 'adjustment disorder' and 'stress-related mental disorder' to increase the possibility of finding all relevant trials on the topic. However, it is possible that additional trials have been missed.

In conclusion, tertiary interventions for individuals with clinical burnout may be effective in facilitating RTW. Successful interventions included advice from labor experts and enabled patients to initiate a workplace dialogue with their employers. More research is needed to evaluate the relative efficacy of specific intervention components.

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#### SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

**Supplementary Material 1.** Documentation of search strategies.