Systematic Review: Complementary Therapies and Employee Well-Being

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Abstract

Background: A variety of workplace-based interventions exist to reduce stress and increase productivity. However, the efficacy of these interventions is sometimes unclear.

Aims: To determine whether complementary therapies offered in the workplace improve employee well-being.

Methods: We performed a systematic literature review which involved an electronic search of articles published between January 2000 and July 2015 from the databases Cochrane Central Register of Controlled Trials, PsycINFO, MEDLINE, AMED, CINAHL Plus, EMBASE, and PubMed. We also undertook a manual search of all applicable article reference lists to ensure that no relevant studies were missed. We only selected published, full-length, English-language, peer-reviewed journal articles. Articles had to address the research objective using valid and reliable measures. We excluded articles concerning return to work

or whose populations had been adversely affected by work resulting in the development of health issues.

Results: We included ten articles in the review from 131 identified. Mindfulness and meditation-based interventions were most effective in improving workplace health and work performance; the latter demonstrating some evidence of maintaining gains up to three months later. The evidence for relaxation interventions was inconclusive.

Conclusions: Mindfulness and meditation interventions may be helpful in improving both psychosocial workplace health and work performance, but long-term efficacy has yet to be fully determined.

Key Words: Complementary therapy; employee well-being; systematic review; mindfulness, meditation

Introduction

Maintaining and improving worker well-being can be challenging for organisations. It has been well established that work, and working conditions, can greatly impact on the health and well-being of employees. This in turn impacts on organisational functionality and efficiency and ultimately organisational finances. For example figures from the Chartered Institute of Personnel and Development **[1]** show that stress is the most common cause of long-term and second most common cause of short-term (less than 4 weeks) sickness absence in the UK for non-manual workers. Furthermore the UK Office for National Statistics **[2]** estimates 15.2 million working days were lost to stress, depression, and anxiety in 2013.

In a series of innovative studies Marmot et al. **[3]** demonstrated that those employees with higher levels of chronic workplace stress also had increased likelihood of developing cardiovascular disease. Similarly, the INTERHEART studies **[4,5]** found that chronic psychological stress was very strongly linked to the development of coronary heart disease (CHD) and that the association between them was as strong as known cardiovascular risk factors such as blood pressure and smoking. Furthermore, a meta-analysis by Segerstrom and Miller **[6]** of over 300 empirical articles found that chronic stress has a negative effect on immune system responses.

Ivancevich et al. **[7]** refer to three levels of workplace interventions for improvement of employee well-being: primary, secondary, and tertiary. Primary interventions attempt to eliminate the source of work pressure within an organisation by changing some aspect of the design, management, and/or organisation of work. Examples include job redesign, changes in the pace of work, and enhancing social support **[8]**. Secondary interventions help the individual to cope with their workplace stress **[9]**, thus dealing with the symptoms of

stress before they become health issues. Examples include cognitive-behavioural skills training to help cope with the thoughts and emotions when managing stressful situations; techniques designed to help employees reduce adverse physiological reactions to stress such as meditation and relaxation; and other techniques such as time management and goal setting **[10]**. Finally, tertiary interventions, such as counselling and employee assistance programmes are designed to help individuals once they have been signed off from work due to work-related illness **[11]**.

There have been several studies and meta-analytical reviews of stress management intervention effectiveness over the past two decades. One compelling review of the literature via the British Occupational Health Research Foundation **[12]** suggested that stress management interventions that focused on how employees cope with workplace stressors may have a modest or short-term impact on a range of variables associated with individual stress. Similarly, Flaxman and Bond **[13]** demonstrated that a cognitive-behavioural approach to stress management resulted in a significant reduction in employee stress over six months. Despite this, relaxation techniques were the most often used **[12]**, possibly due to the low cost and ease of implementation. However, literature reviews have never included studies in which complementary therapies are offered in the workplace and how they impact employee well-being.

The aims of this systematic literature review were to explore whether the implementation of complementary therapies in the workplace can aid in improvement of employee health and performance at work and highlight areas where further investigation is needed.

Methods

We conducted a systematic review according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, a suitable method for assessing intervention evaluation studies **[14]**. We searched the Cochrane Central Register of Controlled Trials, PsycINFO, MEDLINE, AMED, CINAHL Plus, EMBASE, and PubMed databases for peer-reviewed articles. The key terms we applied to the search were related to complementary therapies, employee health, and productivity outcomes (see Appendix 1 for a list of search terms used). Additionally, we searched the references of each eligible article but did not find any further sources not contained within the original search results. We accessed PsycINFO, MEDLINE, AMED, and CINAHL Plus databases through a common search engine EbscoHost. We then used key terms in an advanced Boolean search, which returned the articles for further assessment. Similarly, we searched EMBASE database via OVID. We searched PubMed and Cochrane Central Register of Controlled Trials databases separately using the same key search terms and strategy.

To maintain the quality of the review, we selected only published, full-length peer-reviewed journal articles published since 2000. Selected articles had to test the effectiveness of workplace based complementary therapies on individual outcomes such as employee health and performance. We included studies that deployed any of a variety of different complementary therapies as defined in the key terms. This was based on the findings from published surveys of the most popular and frequently used complementary therapies in the UK **[**e.g. **15,16]**. Due to the review's focus on evaluating the effects of complementary therapies on non-clinical working populations, we excluded studies if participants had high levels of any mental-health related issues at baseline such as depression and anxiety. These were defined by the cut-off criteria in the utilised measures. Furthermore, we aimed to

investigate strategies for improving employee productivity and coping with working conditions, rather than those aiding illness recovery and return to work following any kind of sickness absence or psychological symptomology.

The sample populations had to comprise adult employees (over the age of 18) and valid and reliable measures used to assess outcomes. We also excluded animal studies, non-English articles, and those without either randomised controlled methodology or pre- post intervention approaches. We accessed the articles in July 2015. As we collected no primary data, ethical approval was not required for this study.

Titles, abstracts, and finally the full content of the articles from the search list were scrutinised by three independent reviewers (JMR, PW, SL) to establish to what extent each article met the inclusion criteria for the review, and to ensure high inter-rater reliability. We removed duplicates prior to the analysis.

We used a methodological assessment list to determine the quality of included studies. The assessment list is based on three domains: participant selection, variable measurement, and confounding variable control **[17]**. Our quality assessment (see Table 1) list was adapted from two previous studies: Nieuwenhuijsen et al. **[17]** and Ariens et al. **[18]**. Table 2 demonstrates the quality assessment of each study. Three reviewers (JMR, PW, SL) independently rated each article on each item on the list, with any disagreements discussed until consensus was reached. Fleiss Kappa (K) determined that on first assessment of the articles there was substantial agreement between the three raters (K = .63, 95% CI, .51 to .74). We deemed studies to be of high quality if they achieved a positive score of ≥55% on the quality assessment criteria, and therefore included such studies.

TABLE 1 ABOUT HERE

We assessed a study's quality using the criteria described in Table 1, taking a score from each of the criteria and dividing it by the total number of possible scores. The total number of possible scores varied depending on whether a case-control or prospective-cohort study design was utilised. The maximum scores for case-control and prospective-cohort studies were 11 and 9, respectively. Therefore, a case-control study would have to positively score at least 6 from a possible 11 criteria. A prospective-cohort study would have to score at least 5 from 9. We transposed our quality assessment criteria and the differentiation between prospective-cohort and case-control designs on to a simplified version of the quality assessment criteria of Ariens et al. **[18]**. We used a less conservative baseline participation rate (50% rather than 80%) to widen potential included studies. We removed many exposure measurement criteria in Ariens et al. **[18]** from the current criteria due to their focus on neck pain, which was irrelevant to this study. Overall we excluded many of Ariens' et al. **[18]** criteria because they were too specific and did not assess measures which this study aimed to address. We assessed the strength of evidence for each intervention based on the analytical strategy of Nieuwenhuijsen et al. **[17]** due to the low numbers of papers identified for each intervention. These qualitative criteria can be viewed at Nieuwenhuijsen et al. **[**pp. 279, **17]**.

TABLE 2 ABOUT HERE

Results

Our initial search identified 131 articles: 17 from PsycINFO, 14 from MEDLINE, one from AMED, eight from CINAHL Plus, 21 from EMBASE, 63 from PubMed, and seven from Cochrane Central Register of Controlled Trials. We included ten studies following the

process depicted in Figure 1. Table 2 demonstrates the quality assessment criteria for each of the included studies. Table 3 demonstrates the study characteristics of those studies, and Table 4 demonstrates the included studies as well as implemented interventions, individual and organisational well-being/performance outcomes, and results of these studies.

TABLE 3 ABOUT HERE

Five studies investigated the impact of mindfulness on individual psychological and employee psychosocial health. Mindfulness is defined "as a self-directed practice for relaxing the body and calming the mind through focusing on present-moment awareness" **[**pp. 109, **19]**. It therefore allows increased awareness of what is happening in the moment, and thus let go of consistent ruminations about past and future fears **[20]**. Three studies **[20,21,22]** reported randomised controlled trials (RCTs) and four **[19,21,22,23]** demonstrated pre- post-intervention outcomes (**21, 22** reported both RCT and pre- post-outcomes).

Results of the RCTs were mixed with respect to the measured outcomes. Aikens et al. **[21]** and Shapiro et al. **[20]** found that, compared to a control group, those taking part in a mindfulness-based activity had significantly improved self-reported stress levels as measured by the Perceived Stress Scale. Both also measured burnout-related outcomes with the positive psychology-based measure of vigour finding significant improvements **[21]**, but no changes in burnout **[20]**. Similarly Cohen-Katz et al. **[22]** found no difference in general mental health, although both emotional exhaustion and depersonalization factors of the Maslach Burnout Inventory were significantly improved between treatment and control conditions.

Pre-post treatment studies found that over eight weeks of a mindfulness intervention there were significant improvements in three of four non-organisational individual well-being measures. Perceived stress **[19,21]**, general psychological health **[19,23]**, and resilience **[21]** were each significantly improved, although the Brief Symptom Inventory **[22]** showed no improvement over time. Each study also measured burnout or burnout-related outcomes with vigour **[21]**, emotional exhaustion **[22, 23]**, and all three burnout factors **[19]** finding significant improvements. However, the longer-term lasting impact of mindfulness over four **[19]** and six months **[21]** is less clear. Neither study demonstrated a significant change in perceived stress while finding improvements in resilience **[21]** and self-compassion **[19]** across six and four months respectively. Aikens et al. **[21]** found significant changes across each of the three vigour factors measured, with Bazarko et al. **[19]** and Cohen-Katz et al. **[22]** finding changes in just one of the three Burnout factors (work and emotional exhaustion, respectively).

Table 4 about here

Relaxation is the second intervention type investigated, this time by three studies – one RCT **[24]** and the others a pre-post intervention **[25,26]**. Relaxation is an often-utilised secondary employee intervention designed to improve how individuals cope with workplace stressors **[12]**. Blasche et al. **[25]** found that across an eight week period neither well-being nor job dissatisfaction was significantly impacted by a relaxation and stretching activity. Similarly, Alexopoulos et al. **[24]** found that across measures of perceived stress, locus of control, and working conditions (measured via the job content questionnaire, JCQ), only decision latitude of the JCQ was significantly improved. Differentially Ossebaard **[26]** measured the pre- post-intervention effects of a 'brain wave synchronizer' (commonly known as biofeedback

training), a device designed to activate the relaxation response by exciting particular brain waves. However, again this showed no impact on trait anxiety or burnout measures, with significant differences in short-term trait anxiety following treatment.

From the identified literature, two studies investigated how measures of psychological well-being and psychosocial working health and conditions were affected by meditation. Meditation "allows the mind to experience finer levels of thinking process and to achieve a state of deep relaxation" **[27]**. Both identified studies **[27, 28]** were RCTs, comparing the intervention group with a control group that received no such meditation intervention, with Shonin et al. **[28]** also reporting pre- post intervention effects. The results of both studies appear to be favourable for the impact of meditation on individual and organisational employee outcomes. Both studies measured perceived stress and general mental health and found significant differences across these measures, with Elder et al. **[27]** reporting a strong effect of meditation on both perceived stress and general mental health as well as moderate effects on burnout symptomology. Furthermore while Elder et al. **[27]** found significant differences in all three burnout factors measured by the Maslach Burnout Inventory-Educators Survey, Shonin et al. **[28]** also found difference in psychosocial stressors, job satisfaction, and general work performance. Shonin et al. **[28]** also demonstrated that significant and strong effects of meditation were maintained over three months after completion of the intervention.

Discussion

Our systematic literature review found only ten studies in which complementary therapies were offered by and within the workplace to employees without clinical levels of psychological illness. We found that of the three therapies included, there was strong

evidence for the impact of mindfulness interventions on well-being. Two of three high quality studies **[20, 21]** demonstrated improvements in psychological well-being between treatment and control conditions. Three of four studies **[19, 21, 23]** also demonstrated strong evidence for the short-term impact of mindfulness on well-being, but the evidence for a longer term effect over three to six months was inconclusive. We found strong evidence in two high-quality studies **[27, 28]** for the impact of meditation on both psychological and organisational employee well-being. There was also some evidence from one high-quality study **[28]** for the short and longer-term impact of meditation techniques (three months after intervention completion), a finding not replicated as readily for mindfulness. The evidence for the impact of relaxation for psychological and organisational employee well-being in three high-quality studies **[24, 25, 26]** was inconclusive. One study **[26]** found a positive effect on short-term anxiety. A further study **[24]** demonstrated changes in decision latitude, one of five factors measured in the Job Content Questionnaire.

To ensure the quality of included studies, and basing quality criteria on previous work **[17, 18]**, we included only case-controlled and prospective cohort studies in our review. The small number of suitable studies we found for each complementary therapy investigated risks over-inflating the impact of individual studies, rendering it extremely important to collect all available peer-reviewed articles in this work. Our comprehensive literature search and thorough review of identified literature by all three authors, ensured sensitivity of article selection but further large and methodologically robust studies are clearly needed.

However, there are flaws in our coverage of mindfulness and meditation in employee populations, such as the low sample sizes and response rates in the studies. For example, Shonin et al. **[28]** was the only study that reported, and subsequently adhered to, sample

size power calculations. Further methodologically sound studies are needed to demonstrate the effects identified. Furthermore, only two studies [20, 27] reported response rates of over 50%. The validity of results in unknown or low response rate studies is uncertain. The variable range of workplaces included in the study limits the wider applicability of the individual study findings. None of the studies utilised the same type of each intervention covered. For example in the mindfulness studies, one used a web-based approach **[21]** and the others more traditional mindfulness approaches. Similarly two different types of meditation intervention **[27, 28]** were used. Our findings that complementary therapies, particularly mindfulness, positively impact on employee well-being, resonate with findings from previous studies in non-organisational settings. For example, a meta-analysis by Grossman et al. **[29]** demonstrated that mindfulness may improve well-being in a wide range of clinical and non-clinical populations. However, the latest review of general meditation practices **[30]** demonstrated just small-to-moderate effects. This differential finding and lack of clarity on the longer-term impacts of complementary therapies, such as mindfulness and meditation, mean these are areas that should be explored further in occupational samples through empirical, longitudinal studies. The promising results found in this systematic literature review should be built upon and further investigated through larger and methodologically sound studies.

Key Points:

- There is strong evidence for the short-term effects of mindfulness practice on well-being.
- There is moderate evidence for the longer-term impact (up to three months after intervention completion) of other meditation techniques on well-being
- Further studies to determine long-term impacts of meditation and mindfulness techniques are required.

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Table 1: Quality assessment criteria(adapted from Nieuwenhuijsen et al. 17, Ariens et al. 18)

1. Study Purpose
Score positive if a specific, clearly stated purpose was described.
Score positive if a participation rate of at least 50% was determined at baseline.
Score positive if a study's population characteristics were clearly stated.
2. Case-Control Studies
Score positive if cases and controls are drawn from the same population.
Score positive if a clear description of cases and controls is provided.
Score positive if data collected identically across cases and controls.
3. Prospective-Cohort Studies
Score positive if last response rate at least 70% of baseline.
4. Other
Score positive if data of psychosocial well-being was collected using standardised, valid and reliable measures.
Score positive if data on occupational outcomes was collected using standardised, valid and reliable measures.
Score positive if follow-up data collected at least 12 months apart.
Score positive if data collected at least every 3 months.
Score positive is confounding factors were identified and controlled.

Table 2: Quality criteria assessments of included articles.

	Aikens et al. [21]	Alexopoulos et al. [24]	Bazarko et al. [19]	Cohen-Katz et al. [22]	Blasche et al. [25]	Elder et al. [27]	Galantino et al. [23]	Ossebaard [26]	Shapiro et al. [20]	Shonin et al. [28]
a. Quality Criteria										
Specific, clearly stated purpose	+	+	+	+	+	+	+	+	+	+
Baseline participation rate of 50%	-	-	-	+	-	+	-	-	+	-
Population characteristics clearly stated	-	+	+	+	+	+	+	+	-	+
b. Case Control Studies										
Cases and controls from same population	+	+	N/A	+	+	+	N/A	+	+	+
Clear description of cases and controls	-	+	N/A	-	+	+	N/A	+	-	+
Identical data collection across cases and controls	+	+	N/A	+	+	+	N/A	+	+	+
c. Prospective-Cohort Studies										
Last response rate at least 70% of baseline	N/A	N/A	-	+	N/A	N/A	-	N/A	N/A	N/A
d. Other										
Psychosocial outcome measures valid and reliable	+	+	+	+	+	+	+	+	+	+
Occupational outcomes valid and reliable	+	+	+	+	+	+	+	+	+	+
Follow-up data at least 12 months apart	-	-	-	-	-	-	-	-	-	-
Data collected at least every 3 months	+	+	+	+	+	+	+	+	+	+
Confounding variables identified and controlled	-	+	-	-	+	+	-	-	+	+

Table 3: Study characteristics and sample demographics table.

	Study Design	Population		Gender (n, %)		Mean Age	Response Rate (%)	Sample Size
		Country	Workplace Type	Male	Female			
Aikens et al. [21]	RCT and pre-post-intervention	United States	Manufacturing	Unknown		Unknown	22.5	Intervention n=44 Control n=45
Alexopoulos et al. [24]	RCT	Greece	Various	49 (39)	78 (61)	Unknown	Unknown	Intervention n=68 Control n=59
Bazarko et al. [19]	Pre- post-intervention	United States	Healthcare (nursing)	36 (100)	0	52.2	23.1	36
Blasche et al. [25]	Pre- post-intervention	Austria	Various	56 (60)	37 (40)	40.1	Unknown	93
Cohen-Katz et al. [22]	RCT and pre-post intervention	United States	Healthcare	0	27 (100)	46.0	Unknown	Intervention n=14 Control n=13
Elder et al. [27]	RCT	United States	Secondary School	19, (47)	21, (53)	36.1	53	40
Galantino et al. [23]	Pre- post-intervention	United States	University Hospital	3, (4)	61, (96)	43	Unknown	64
Ossebaard [26]	Double blind experiment	Netherlands	Healthcare	45 (67)	22 (33)	39.0	Unknown	67
Shapiro et al. [20]	RCT	United States	Healthcare	Unknown		Unknown	51	38
Shonin et al. [28]	RCT and pre-post intervention	United Kingdom	Office-based	86 (57)	66 (43)	40.0	Unknown	152

RCT = randomised controlled trial

Table 4: Intervention, outcome measures, and results of included studies.

	Intervention Type	Psychosocial Wellbeing Measure	Results (ES)	Occupational Outcome Measure	Results (ES)
Aikens et al. [21]	Web-Based Mindfulness Programme	Perceived Stress Scale	<.05 treatment v control <.05 Time 1 v Time 2 (1.03) NS Time 1 v Time 3	Shirom Vigor Scale (strength, energy, liveliness)	Each <.05 treatment v control Each <.05 Time 1 v Time 2 (.45 to .72) Each <.05 Time 1 v Time 3 (.57 to .83)
		Connor-Davidson Resilience Scale	<.05 treatment v control <.05 Time 1 v Time 2 (.63) <.05 Time 1 v Time 3 (.68)		
Alexopoulos et al. [24]	Relaxation breathing; Progressive muscle relaxation	Perceived Stress Scale	NS	Job Content Questionnaire (decision, peer support, supervisor support, demands)	Decision <.05 Other factors NS
		Health Locus of Control Scale	NS		
Bazarko et al. [19]	Mindfulness	Perceived Stress Scale	P<.05 Time 1 v Time 2 NS Time 2 v Time 3	Copenhagen Burnout Inventory (personal, work, client)	At Time 1 v Time 2, each factor p<.05 Time 2 v Time 3, work <.05, Other factors NS
		SF-12v2 Health Survey (Physical Component Score)	P<.05 Time 1 v Time 2 NS Time 2 v Time 3		
		SF-12v2 Health Survey (Mental Health Component Score)	P<.05 Time 1 v Time 2 NS Time 2 v Time 3		
		Brief Serenity Scale	P<.05 Time 1 v Time 2 NS Time 2 v Time 3		
		Self-Compassion Scale	P<.05 Time 1 v Time 2 P<.05 Time 2 v Time 3		
Blasche et al. [25]	Biofeedback-assisted relaxation	Emotional well-being	NS	Job Dissatisfaction	NS
		Fatigue	NS		

Cohen-Katz et al. [22]	Mindfulness	Brief Symptom Inventory	NS (treatment v control) NS Time 1 v Time 2	Maslach Burnout Inventory	Emotional Exhaustion & accomplishment p<.05 (treatment v control), depersonalization NS Emotional Exhaustion: P<.05 Time 1 v Time 2. P<.05 Time 2 v Time 3 Other Factors NS over time
Elder et al. [27]	Transcendental meditation	Perceived Stress Scale Mental Health Inventory-5	P<.05 (.94) P<.05 (.67)	Maslach Burnout Inventory-Educators Survey	P<.05 (.40)
Galantino et al. [23]	Mindfulness	Profile of Moods States-Short Form	P<.05 Time 1 v Time 2	Maslach Burnout Inventory	Emotional Exhaustion p<.05, other factors NS Time 1 v Time 2
Ossebaard [26]	Neurofeedback based relaxation	State-Trait Anxiety Inventory	Short-term state effects P<.05 Longer term effects NS	Maslach Burnout Inventory – Dutch Version	All factors NS
Shapiro et al. [20]	Mindfulness	Perceived Stress Scale Satisfaction with Life Scale	P<.05 NS	Maslach Burnout Inventory	NS
Shonin et al. [28]	Meditation	Depression, anxiety, and Stress Scale	P<.05 (treatment v control) P<.05 Time 1 v Time 2 (2.02) P<.05 Time 1 v Time 3 (1.99)	Management Standards Indicator Tool Abridged Job in General Scale Role-Based Performance Scale	P<.05 (treatment v control) P<.05 Time 1 v Time 2 (-1.89) P<.05 Time 1 v Time 3 (-1.67) P<.05 (treatment v control) P<.05Time 1 v Time 2 (-1.88) P<.05Time 1 v Time 3 (-1.64) P<.05 (treatment v control) P<.05Time 1 v Time 2 (-2.32) P<.05Time 1 v Time 3 (-2.21)

ES = Effect Size