

## Review article

# Workplace interventions to reduce depression and anxiety in small and medium-sized enterprises: A systematic review

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## ABSTRACT

**Background:** Depression and anxiety are the most prevalent mental health difficulties in the workplace, costing the global economy \$1 trillion each year. Evidence indicates that symptoms may be reduced by interventions in the workplace. This paper is the first to systematically review psychosocial interventions for depression, anxiety, and suicidal ideation and behaviours in small-to medium-size enterprises (SMEs).

**Methods:** A systematic search following PRISMA guidelines, registered in PROSPERO (CRD42020156275), was conducted for psychosocial interventions targeting depression, anxiety, and suicidal ideation/behaviour in SMEs. The PubMed, PsycINFO, Scopus, and two specific occupational health databases were searched, as well as four databases for grey literature, without time limit until 2nd December 2019.

**Results:** In total, 1283 records were identified, 70 were retained for full-text screening, and seven met the inclusion criteria: three randomised controlled trials (RCTs), three before and after designs and one non-

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randomised trial, comprising 5111 participants. Study quality was low to moderate according to the Quality Assessment Tool for Quantitative Studies. Five studies showed a reduction in depression and anxiety symptoms using techniques based on cognitive behavioural therapy (CBT), two reported no significant change.

Limitations: Low number and high heterogeneity of interventions and outcomes, high attrition and lack of rigorous RCTs.

Conclusions: Preliminary evidence indicates CBT-based interventions can be effective in targeting symptoms of depression and anxiety in SME employees. There may be unique challenges to implementing programmes in SMEs. Further research is needed in this important area.

## 1. Introduction

Depression and anxiety are the most prevalent mental health difficulties in the workplace, and the impact of depression and anxiety disorders on the global economy is €1 trillion each year in lost productivity (World Health Organization, 2019). In the European Union (EU), approximately one in six people suffer from mental health disorders annually (OECD and European Union, 2018), with depression being the most disabling disorder in terms of years lost to ill-health, disability or premature death, and anxiety disorders the most prevalent (Wittchen et al., 2011).

Workplace-based psychosocial interventions aimed at preventing and treating depression and anxiety can help reduce these social and financial costs. Interventions based on cognitive-behavioural therapy (CBT) are the most studied and therefore have the best evidence for reducing symptoms of depression and anxiety (Joyce et al., 2016; Nigatu et al., 2019; Richardson and Rothstein, 2008; Yunus et al., 2018). However, small- to medium-sized enterprises (SMEs) are less likely to implement health promotion programmes (McCoy et al., 2014). One possible reason is that SMEs may be motivated more by company-related factors than humanitarian motives and may lack knowledge regarding the related impact on business (Hughes et al., 2011). They also lack the capacity larger companies possess to implement workplace interventions (Hannon et al., 2012), and to manage the return to work of those on sick leave due to mental health problems (Koopmans et al., 2008). In the EU, SMEs are defined as employing 250 people or less (European Union Commission, 2003) and in 2015 they accounted for 92.8% of the EU's non-financial business economy (approximately 91 million people; Eurostat, 2018). SMEs are also more vulnerable to financial and economic crises, as observed in the current COVID-19 pandemic (OECD, 2020), yet there is surprisingly little data regarding depression and anxiety in SMEs, or interventions targeted at this workforce.

This paper aims to fill a gap in the existing research by systematically reviewing the literature about the current evidence for interventions targeting depression, anxiety, and suicidal ideation and behaviour in the SME workplace.

## 2. Methods

### 2.1. Search strategy and selection criteria

A systematic review was conducted addressing the following inclusion criteria: (1) study sample included employees or owners/managers of companies specified as SMEs; (2) the intervention was psychosocial (defined as “interpersonal or informational activities, techniques, or strategies that target biological, behavioural, cognitive, emotional, interpersonal, social, or environmental factors with the aim of improving health functioning and wellbeing”; (Institute of Medicine of the National Academies, 2015, p. 32); (3) mental health outcomes were measured in terms of symptoms of depression, anxiety and/or suicidal ideation/behaviour; (4) quantitative or qualitative data comparing baseline and post-intervention data; (5) published in English; and (6) the intervention was delivered through the workplace.

PsycINFO, PubMed, and Scopus and two occupational health

databases, NIOSHTIC-2 from the National Institute for Occupational Safety and Health and CISDOC from the International Labour Organization, were searched for primary literature. BIOSIS Previews, Clinical Trials, the Cochrane Central Register of Controlled Trials and the International Standard Randomised Controlled Trial Number Registry were searched for unpublished data. Searches were performed from the beginning of records until 2nd December 2019. Reference lists were further searched for additional literature. The search strategy (please see Supplementary Material 1) comprised three categories, including keywords relating to SMEs, keywords relating to psychosocial interventions, and outcomes related to depression, anxiety, and/or suicidal ideation or behaviour.

### 2.2. Screening procedure

Results were screened in a two-stage procedure by two independent researchers (BH and IGS) and discrepancies resolved in a consensus meeting with a third (JCM). The quality of studies was assessed using the Quality Assessment Tool for Quantitative Studies (QATQS; Thomas et al., 2004) following a similar procedure of independent review and a consensus meeting.

### 2.3. Data extraction

Data extraction from selected studies included number of participants (intention-to-treat and completers), intervention and control condition characteristics, outcomes in terms of changes in symptoms of depression, anxiety, and suicidal ideation or behaviour, time points for data evaluation, country, and sector. Due to the small number of studies, and high heterogeneity of both interventions and outcomes, a meta-analysis could not be performed. However, whenever studies provided data necessary to compute effect sizes and these were not already reported, they were estimated using Higgins and Green's formulas (Higgins and Green, 2011). In some studies, data were missing regarding effect sizes or details of the intervention carried out. In these cases, study authors were contacted, and data included if information was provided.

The review was conducted according to PRISMA guidelines (Moher et al., 2009) and registered with PROSPERO: CRD42020156275.

## 3. Results

The initial systematic search yielded 1396 results, which was reduced to 1283 once duplicates were removed. Following the title/abstract screening, 70 full-text articles were retrieved. Seven studies met inclusion criteria. The detailed process is shown in the PRISMA flow diagram (Fig. 1). The included studies comprised three randomised controlled trials (RCTs), three before and after study designs and one non-randomised trial, with a total of 5111 participants.

An overview of the characteristics of the included studies is presented in Table 1. Five studies trialled CBT-based interventions (Blonk et al., 2006; Kim et al., 2014; Martin et al., 2020; Saraf et al., 2019; Sørensen et al., 2019), ranging from self-administered to face-to-face support. One large study employed CBT-based psychotherapy as well as other unspecified psychotherapy techniques (Demou et al., 2018). In another case the intervention had been run by an external company and

they were unable to specify what techniques were used (Schwatka et al., 2018). Study samples ranged from SME employees, entrepreneurs and managers to those who were self-employed across a wide range of sectors and countries. All companies were SMEs of <250 employees except in the study by Kim and colleagues (Kim et al., 2014), in which a company of 295 people was considered an SME according to local Korean standards (Kim, 2007). None of the studies included suicidal behaviour/ideation as an outcome. All studies relied on self-reported measures of the outcomes with only two of them including a diagnostic interview at baseline (Blonk et al., 2006; Sørensen et al., 2019), of which one excluded participants with major depressive disorder and anxiety disorders (Blonk et al., 2006). Thus, the results refer to changes in symptoms of depression and anxiety but not to effectiveness in clinical depression and anxiety. In three studies the intervention was aimed at SME employees but delivered outside the physical workplace (Blonk et al., 2006; Demou et al., 2018; Sørensen et al., 2019), either due to employees being on sick leave or by making use of local psychiatric services. These studies included the only two in which clinical diagnoses of mental disorder were made and were included as relevant to addressing more severe mental health issues in the workplace. The results are presented in Table 2.

All three RCTs (Blonk et al., 2006; Martin et al., 2020; Saraf et al., 2019) evaluated CBT-based interventions. An Australian study (Martin et al., 2020) with an overall sample of 297 SME owners from a wide range of sectors compared three treatment conditions: (1) a self-administered DVD and resource kit based on CBT stress management techniques, (2) the aforementioned plus telephone support, and (3) a wait-list active control group who received psychoeducational information only. Both the self-administered DVD plus telephone support (Change = -2.5, 95% CI [-4.1, -0.9];  $p = 0.002$ ) and active control

(Change = -1.5, 95% CI [-2.7, -0.2];  $p = 0.02$ ) led to a significant decrease in the Kessler 10 measure of psychological distress from pre- to post-treatment, while the self-administered only group showed no significant reduction (Change = -1.3, 95% CI [-2.9, -0.4];  $p > 0.05$ ). The effect size in the self-administered plus telephone group was moderately greater than in the active control group (Hedge's  $g = 0.35$ ; CI [-0.054, 0.763]), while the remaining comparisons did not even reach small effect sizes. Another RCT from Pakistan (Saraf et al., 2019) recruited 235 subjects from amongst beneficiaries of a cash grant programme to re-establish businesses in a wide range of sectors in a conflict-affected area, in a context of conflict, fragility and violence. The study compared five CBT group sessions lasting three hours each, plus the cash grant, with a control group who received the financial grant only. Participants in the treatment group had a greater (but not significant) reduction in a composite score of anxiety (General Anxiety Disorder-7) and depression (Patient Health Questionnaire-9) symptoms at five weeks post-intervention (n.s.,  $p$  value not reported) and at three-month follow-up ( $p = 0.087$ ) compared to the control group.

With 122 participants, a Dutch RCT (Blonk et al., 2006), conducted in self-employed workers and entrepreneurs across a wide range of sectors with adjustment disorders, compared: (1) individual CBT consisting of 11 two-weekly 45 min sessions; (2) a combined intervention comprising CBT-based stress management techniques and advice delivered by a labour expert comprising five or six twice-weekly hour-long sessions, and (3) a control group who received two GP checks four months apart. A significant decrease between baseline and 4-months follow up on the Depression Anxiety and Stress Scale was found in all three study arms ( $p < 0.01$ ). Furthermore, this was maintained in all groups at 10-month follow-up ( $p < 0.01$ ). In terms of return to work, participants in the combined treatment condition achieved a

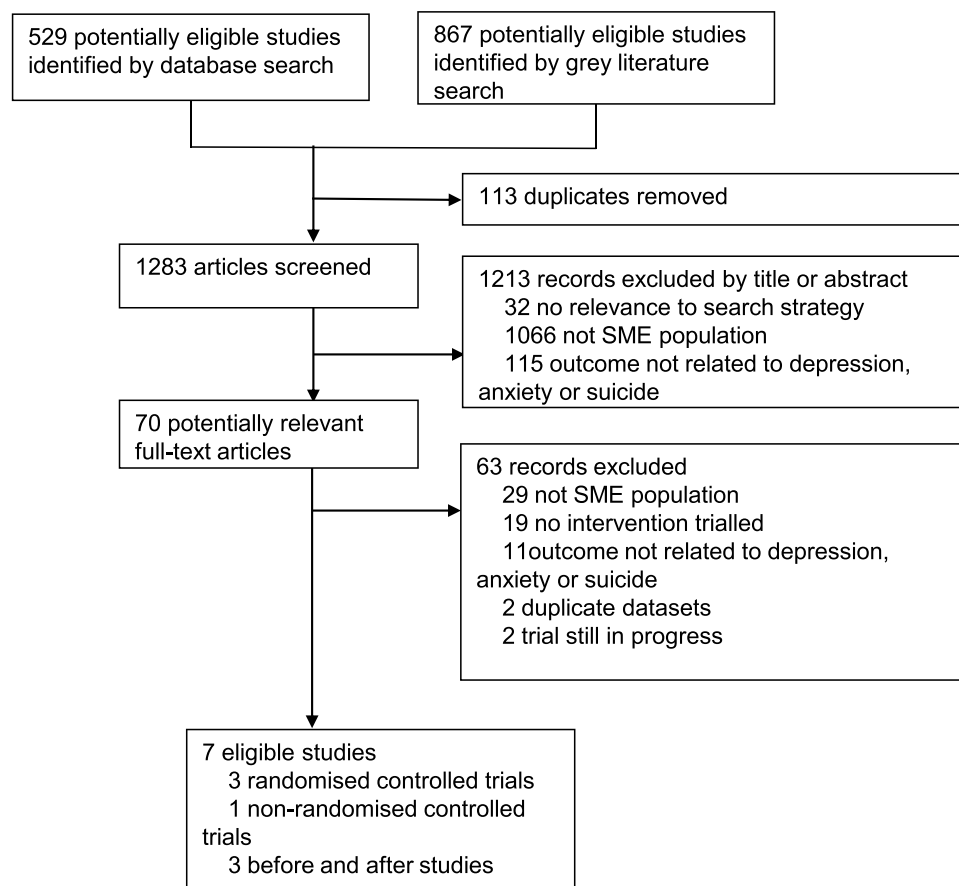


Fig. 1. PRISMA flow diagram.

**Table 1**  
Overview of study characteristics.

Author/ Year	Study Design	Population No. Started (No. Completers)	Gender at Baseline	SME Sector	Intervention	Intervention Intensity	Country
Blonk et al. (2006)	Randomised controlled trial	122 (98) self- employed people on sick leave	81% male/19% female	39% agricultural, 18% service, 12% construction, 8% health care, 8% trade, and 15% other.	1) individual combined intervention of brief CBT- based stress management and advice on work processes, carried out by a labour expert (n=40)2) Individual CBT therapy using protocol for treatment of burnout or other adjustment disorders (n=40) 3) Control: visits with a general practitioner to check legitimacy of sickness claim. (n=42)	1) 5-6 twice a week sessions of approx. 60 mins 2) 11 two- weekly sessions of approx. 45 mins 3) 2 sessions 4 months apart	Netherlands
Kim et al. (2014)	Before and after design	252 (211) white- and blue-collar workers from one medium-sized company	White collar: 80.2% male/19.8% female Blue-collar: 100% male	Metal-forging	Dissemination of stress- management information including CBT techniques, anger management, breathing and relaxation techniques. (n=248) Subgroup: participatory action-oriented training (N=194) Subgroup: Individual stress reduction aimed at improving coping skills (n=24)	Info distributed 7 times over 7 weeks. Workshop: 3 x 2 hour sessions over 1 week Subgroup: 5 weekly sessions	South Korea
Schwatka et al. (2018)	Before and after study	842 (835) employees of small (<50) and 1093 (1000) employees of small/medium- sized (50-99).	Small businesses: 56.2% male/43.8% female Small/medium-sized businesses: 57.1% male/42.9% female	Small/small-medium: 37.7/43.6% services, 28.5/14.2% finance, 16/ 3.8% mining/ construction, 5.6/3.1% wholesale, 4.8/0.2% transport/utilities, 4.4/ 13.5% public administration, 1.8/ 11.2% manufacturing, 1.5/0.4% agriculture, 0.1/10.2% retail Service for all SME employees in catchment area	Worksite Wellness Program comprising telephone health counselling and resource material aimed at improving a range of healthy living factors (n=1935)	Distribution of resource material and unlimited telephone counselling	USA
Demou et al. (2018)	Retrospective study	1986 (1696) self- employed and SME employees	48% female/51% male/ 0.6% not specified or data missing	Service for all SME employees in catchment area	Telephone-based case management and some face- to-face therapeutic support (n=11748)	Time in program: majority (79%) 31-180 days, 2% >365 days	Scotland
Saraf et al. (2019)	Randomised controlled trial	235 (210) SME entrepreneurs. 87% of firms were ≤ 20 employees	Control: 95.7% male Intervention: 94.1% male	Control/intervention: 33.3%/31.4% manufacturing, 13.7%/ 17% retail, 12.9%/ 17.8% services, 5.1%/ 6.8%wholesale, 35%/ 27.1% other	1) Financial grant plus CBT in face-to-face group setting led by trainer and co- facilitator (n=118) 2) Financial grant only (control) (n=117)	5 x 3 hour weekly group sessions	Pakistan
Sørensen et al. (2019)	Non- randomised trial	586 (420) employees of companies ranging from 170-240 employees.	Clinical cases: 42.1% male/57.9% female; subclinical cases: 65% male/35% female; healthy controls: 60.8% male/39.2% female	Public services, manufacturing, education and finance	1) Clinical cases of depression and anxiety (Dx from PSE plus HAM-D 18+ or HAM-A 20+) → psychiatric treatment based on standard protocols until remission achieved (n=38) 2) Subclinical cases (HAM-D 13-17/ HAM-A 15- 19) → CBT focused on stress- reduction and resilience (n=20) 3) Controls comprising healthy controls (n=513) and refused treatment (n=15)	1) Mean treatment period: 369 days. 2) Mean treatment period: 103 days.	Denmark
Martin et al. (2020)	Randomised controlled trial	297 (147) SME owner/managers	Control: 43% male/ 57% female; DVD + kit; 37% male/63% female;	Health, service industries, retail, building and	1) self-administered DVD: psychoeducation and stress- focused CBT + resource kit	60-minute DVD; telephone	Australia

(continued on next page)

Table 1 (continued)

Author/ Year	Study Design	Population No. Started (No. Completers)	Gender at Baseline	SME Sector	Intervention	Intervention Intensity	Country
			DVD + telephone support: 29% male/ 71% female	construction, transport, finance and others	(n=115) 2) self-administered DVD + resource kit + telephone support (n=78) 3) active waitlist control group: psychoeducation- only DVD + resource kit (n=104)	support of 6 x 30-minute calls	

full return to work approximately 80 days (mean average) earlier than those in the CBT or control group (Cohen's  $d = 0.64$  and  $d = 0.62$  respectively,  $p < 0.01$ ), and a partial return to work approximately 55 days sooner than in the CBT or control group ( $d = 0.55$  and  $d = 0.50$  respectively,  $p < 0.01$ ). However, the latter was not significant after adjusting for gender, age, education, and the number of employees.

Of the four non-RCT studies, a longitudinal non-randomised Danish trial (Sørensen et al., 2019) allocated 586 subjects from 6 SMEs from various sectors to different study conditions based on clinical status determined through clinical interview. All employees with clinical symptoms were referred to treatment based on standard protocols consisting of psychotherapy and medical consultations, with a mean duration of 369 days. Employees with subclinical symptoms were referred to an individual CBT psychotherapy of a mean duration of 103 days aimed at preventing the onset of clinical disorder. Employees not meeting these symptom criteria were assigned to the healthy control group. In both active treatment conditions, there was a reduction in symptoms identified with the Symptom Checklist 90-R when comparing baseline with 12-month follow up ( $d = 0.49$ ,  $p < 0.001$  for depression;  $d = 0.50$ ,  $p = 0.004$  for anxiety; and  $d = 0.55$ ,  $p < 0.001$  for global severity for the clinical cases;  $d = 0.40$ ,  $p = 0.036$  for depression;  $d = 0.46$ ,  $p = 0.064$  for anxiety; and  $d = 0.52$ ,  $p = 0.041$  for global severity for the sub-clinical cases). Those who refused treatment showed a significant reduction in depression ( $d = 0.29$ ,  $p = 0.009$ ) and global severity ( $d = 0.56$ ,  $p = 0.002$ ), but not anxiety, despite the larger effect size ( $d = 0.82$ ,  $p = 0.07$ ); it is unknown if they pursued treatment options outside the study. Healthy controls with no clinical or subclinical condition at baseline showed no significant change in depressive symptoms ( $d = 0.12$ ,  $p = 0.472$ ), anxiety ( $d = 0.16$ ,  $p = 0.096$ ), or global severity ( $d = 0.19$ ,  $p = 0.967$ ).

In a retrospective Scottish study (Demou et al., 2018), a four-year evaluation was carried out into the effectiveness of a programme of telephone-based case management and face-to-face therapeutic support, including CBT and other psychological therapies, aimed at assisting 11,748 SME employees from a range of sectors with health problems ranging from mental health conditions to musculoskeletal disorders. Of these, a sub-section of 1696, based on the symptoms they showed, were asked to fill out the Hospital Anxiety and Depression Scale (HADS). Thirty percent had a baseline score on the HADS indicative of depression, and 44% had a baseline score on the HADS indicative of an anxiety disorder, although a self-report scale does not confirm clinical diagnosis. There was a significant reduction in levels of depression symptoms post-intervention compared to baseline as measured by the HADS ( $d = 1.74$ ,  $p < 0.001$  for all participants;  $d = 1.57$ ,  $p < 0.001$  for participants presenting primarily with a mental health condition) and anxiety symptoms ( $d = 0.90$ ,  $p < 0.001$  for all;  $d = 1.80$ ,  $p < 0.001$  for participants presenting primarily with a mental health condition). Data regarding number of working days lost while participating in the programme was available for 291 participants with a mental health condition and showed a mean average of 44.0 days. Of 956 participants with a mental health condition, 83% thought this was resolved at discharge from the programme. However, there was no control group against which to

compare these statistics.

Schwatka et al. (2018) used data from a large USA before and after study comprising a total sample of 1935 employees of SMEs from different sectors who had implemented the Worksite Wellness Program, comprising annual health risk assessments, unlimited telephone counselling and access to educational resources, to assess if it could improve a range of health indicators including self-reported presence or absence of depression. Participating businesses also received organisational level feedback and action plans. In small businesses (<50 employees) there was a reduction in the number of participants reporting depression at one-year follow-up as compared to baseline (OR=0.71, 95% CI [0.55, 0.92]). This trend was maintained at two years, with no changes as compared to one year follow up (OR=1.00, 95% CI [0.50, 2.02]). In small-medium businesses (50–99 employees) there was also a reduction in self-reported depression at one-year follow up (OR=0.91, 95% CI [0.73, 1.14]). Furthermore, the reduction was evident at two year follow up compared to one year follow up (OR=0.80, 95% CI [0.57, 1.11]).

A study carried out in South Korea (Kim et al., 2014) applied an intervention in one metal-forging company using a before and after design. This study combined an organisational approach, consisting of employee workshops to brainstorm company-wide improvements, with a psychosocial approach comprising the dissemination of stress management information based on CBT. In addition, a reduced proportion of the company, either selected because of high scores on the Worker's Stress Response Inventory (WSRI) or a sleep questionnaire or volunteers, also received individual CBT-based stress reduction sessions. The authors analysed data for the whole sample and found no significant decrease in depressive symptoms measured with the WSRI as compared to baseline ( $d = 0.12$ ,  $p = 0.177$  for blue-collar; and  $d = 0.12$ ,  $p = 0.247$  for white-collar workers), despite reporting short-term improvements in a range of psychosocial factors implicated in job stress.

#### 4. Discussion

To our knowledge, this is the first systematic review to evaluate psychosocial interventions targeted at reducing depression and anxiety among SME employees and owner/managers. Following a systematic search of a broad range of sources, we identified seven relevant studies. Depressive symptoms were the most studied outcome followed by anxiety symptoms, and only one study confirmed clinical anxiety and depression at baseline. None of the studies reported outcome data on suicidal ideation or behaviour. Thus, the results provide an indication of the effectiveness of psychosocial interventions on the reduction of depression and anxiety symptoms in a non-clinical population of SME employees.

An important finding is the low number of robust studies on this topic. SMEs account for approximately 90% of businesses and over 50% of employees worldwide (World Bank Group, 2021), and the World Health Organization ranks depression as the largest single contributor to global disability and anxiety disorders as the sixth largest (World Health Organization, 2017). This is compounded by low treatment rates, with only one in five people in high-income countries and one in 27 in

**Table 2**  
Study findings.

Results from Randomized Controlled Trials Author/Year	Outcome Measure	Evaluation Timepoints	Main Findings	QATQS Score
Blonk et al. (2006)	Symptoms of depression and anxiety (DASS) No. days until partial and full return to work	Baseline, post-treatment (4 months), 10-month follow-up	↓ in psychological complaints over time ( $p < 0.01$ ) in all arms of the study, no significant differences between intervention arms. Return to work: Combined intervention significantly more effective than CBT and control in achieving partial full return to work ( $d = 0.55$ and $d = 0.50$ respectively, $p < 0.01$ , mean average 55 days sooner), and full return to work (Cohen's $d = 0.64$ and $d = 0.62$ respectively, $p < 0.01$ , mean average 80 days sooner). Effect remained significant for full return to work only once gender, age, education, and the number of employees was adjusted for ( $p < 0.01$ )	Moderate
Saraf et al. (2019)	Symptoms of depression and anxiety (PHQ-ADS).	Baseline, post-treatment (5 weeks), 3-month follow-up	↓ symptoms of depression and anxiety at 5 weeks (n.s., $p$ value not specified) and 3 months ( $p = 0.087$ ) as compared to control group	Moderate
Martin et al. (2020)	Psychological distress (K-10)	Baseline, post-treatment (4 months)	↓ psychological distress in self-administered plus telephone support group ( $p = 0.002$ ) and active control group ( $p = 0.02$ ); effect size greater in telephone support group compared to control (Hedge's $g = 0.35$ ; CI $[-0.054, 0.763]$ ). No change in self-administered only arm (n.s., $p$ value not reported). All results adjusted for sex, age and education	Weak
Sørensen et al. (2019)	Mental health diagnosis (PSE). Symptoms of depression (HAM-D), anxiety (HAM-A), global severity (SCL-90-R).	Four assessments over 16 months: T0 (4 months prior to baseline) T1 baseline, T2 6-month follow-up, T3 12-month follow-up	↓ global severity, anxiety and depressive symptoms for clinical and subclinical cases comparing baseline with 12 month follow up. Clinical cases: ( $d = 0.49$ , $p < 0.001$ for depression; $d = 0.50$ , $p = 0.004$ for anxiety; and $d = 0.55$ , $p < 0.001$ for global severity) Subclinical cases: $d = 0.40$ , $p = 0.036$ for depression; $d = 0.46$ , $p = 0.064$ for anxiety; and $d = 0.52$ , $p = 0.041$ for global severity Treatment refusers: significant ↓ for depression ( $d = 0.29$ , $p = 0.009$ ) and global severity ( $d = 0.56$ , $p = 0.002$ ) but not anxiety despite the larger effect size ( $d = 0.82$ , $p = 0.07$ ) Healthy controls: no significant change in depressive symptoms ( $d = 0.12$ , $p = 0.472$ ), anxiety ( $d = 0.16$ , $p = 0.096$ ) or global severity ( $d = 0.19$ , $p = 0.967$ ).	Weak
Kim et al. (2014)	Symptoms of depression (WSRI)	Baseline and post-treatment (10 weeks)	No statistically significant change in symptoms of depression: ( $d = 0.12$ , $p = 0.247$ for white-collar workers and $d = 0.12$ , $p = 0.177$ for blue collar workers).	Moderate
Schwatka et al. (2018)	Self-reported absence or presence of depression	Baseline, 1-year follow-up, 2-year follow-up	↓ depression at first follow-up in small businesses (OR = 0.71, 95% CI [0.55, 0.92]), with no significant change between first follow-up and second follow-up (OR=1.00, 95% CI [0.50, 2.02]). ↓ depression at first follow-up in small/medium businesses (OR = 0.91, 95% CI = 0.73, 1.14) and further reduction at second follow-up compared to first (OR=0.80, 95% CI [0.57, 1.11]). All adjusted for age and gender	Moderate
Demou et al. (2018)	Symptoms of depression (HAM-D) and anxiety (HAM-A).	Baseline and at discharge	↓ symptoms of depression at discharge compared to baseline ( $p < 0.001$ ; $d = 1.74$ , $p < 0.001$ for all participants; $d = 1.57$ , $p < 0.001$ for participants presenting primarily with a mental health condition). ↓ symptoms of anxiety ( $d = 0.90$ , $p < 0.001$ for all; $d = 1.80$ , $p < 0.001$ for participants presenting primarily with a mental health condition)	Moderate

Note: DASS: Depression Anxiety Stress Scale; WSRI: Worker's Stress Response Inventory; HAM-D: Hamilton Depression Scale; HAM-A: Hamilton Anxiety Scale; PHQ-ADS: Patient Health Questionnaire - Anxiety and Depression Scale; PSE: Present State Examination; SCL-90-R: Symptom Checklist-90-Revised; K10: Kessler-10 Psychological Distress Scale.

low-/lower-/middle-income countries receiving adequate treatment for depression (Thorncroft et al., 2017). Therefore, there is a significant public health opportunity if this population can be reached and treated in a timely manner. While due to the lack of studies and their methodological limitations only preliminary conclusions can be drawn from our review, these first results may provide important early indicators and best practises for how to tackle depression and anxiety in the SME population.

The results from the three RCTs (Blonk et al., 2006; Martin et al., 2020; Saraf et al., 2019) show there is some evidence that CBT-based interventions can reduce symptoms of depression and anxiety in an SME setting, although further research is required to determine the most effective mode, duration and intensity of delivery. It is important to note that the RCTs (Blonk et al., 2006; Martin et al., 2020; Saraf et al., 2019) did not find significant differences between the CBT intervention and the control group in terms of effectiveness of reducing symptoms, and that

symptom reduction was not based on a clinical diagnosis, meaning symptoms may have been mild with changes in scores difficult to detect. Effect sizes were largely unreported in the original studies but, where possible, were calculated by us and ranged from small to moderate.

On the other hand, the study designs and effect sizes found in the non-RCT studies varied widely, which makes it difficult to generalise the findings. Face-to-face individual therapies showed positive results. Sørensen and colleagues found generally moderate effect sizes (Sørensen et al., 2019), similar to results for face-to-face interventions in the RCT by Blonk and colleagues (Blonk et al., 2006). In the study by Demou and colleagues (Demou et al., 2018), there were large effect sizes comparing baseline to six months follow-up, but the intervention ranged between telephone-based case management and face-to-face therapeutic support, making it hard to draw conclusions for the purposes of our review. Meanwhile, the study by Kim et al. (2014) found no significant effect of their intervention on depressive symptoms.,

Putting these results into the context of mental health interventions conducted in larger enterprises, the effectiveness of CBT-based interventions is similar to that which has been found in companies of all sizes, where CBT is the most studied intervention and has been found to have greater or equal effectiveness when compared to other approaches (Carolan et al., 2017a; Naidu et al., 2016; Nigatu et al., 2019), although combining therapeutic approaches may increase effectiveness (Yunus et al., 2018). However, there may be important differences between large companies and SMEs in how the intervention is delivered. Small businesses have low take up of health promotion programmes (McCoy et al., 2014). While a study by Taylor and colleagues (Taylor et al., 2016) found that time and funding were major difficulties in implementing health promotion programmes in businesses of all sizes, small business managers were less likely to think that this activity belonged in the workplace. The studies included in this review may reflect the realities of the challenges in implementing programmes in SMEs, as in many cases the intervention was accessed offsite away from the workplace (Blonk et al., 2006; Demou et al., 2018; Saraf et al., 2019; Sørensen et al., 2019), or the SME owner/manager could directly access the material for themselves (Martin et al., 2020). In only two interventions (Kim et al., 2014; Schwatka et al., 2018) was material distributed via the company. In contrast, reviews of studies which have usually taken place in larger businesses show a larger number of interventions based specifically in the workplace (Nigatu et al., 2019; Yunus et al., 2018) although, similar to the studies led by Demou and Blonk, when workers are on sick leave, the intervention is evidently not workplace-based (Naidu et al., 2016).

Attrition exceeded 40% in four out of the seven studies (Demou et al., 2018; Martin et al., 2020; Schwatka et al., 2018; Sørensen et al., 2019). This figure is in line with that seen in previous studies in the SME population (Martin and LaMontagne, 2018), and generally higher compared to rates in companies of all sizes (Yunus et al., 2018). In larger companies, it was found that the integration of technological elements with therapist support reduced attrition, and a shorter time frame, engagement through mails and messaging, and persuasive technology such as self-monitoring could increase engagement and adherence (Carolan et al., 2017b; Yunus et al., 2018). These elements could be added to SME-based interventions in an effort to improve attrition rates.

Some interventions were easier to implement affordably on a wide scale, such as those in a group setting or providing educational materials (Kim et al., 2014; Martin et al., 2020; Saraf et al., 2019; Schwatka et al., 2018). The addition of telephone support appeared to be beneficial (Martin et al., 2020; Schwatka et al., 2018) and in line with findings in companies of all sizes (Yunus et al., 2018), and may be a cost-effective way to enhance effectiveness which warrants further research. However, in the studies included in our review, there was a general lack of focus on the impact of interventions on occupational outcomes, which is in line with findings from a systematic meta-review in companies of all sizes (Joyce et al., 2016). Only two studies (Martin et al., 2020; Saraf et al., 2019) included the costs of their interventions and no study assessed its financial impact in terms of direct or indirect costs for

companies, health services and the individual. This data would have been especially interesting in order to understand whether face-to-face interventions, which in our review had more robust effect sizes, have a sufficient impact on absenteeism and presenteeism to be cost-effective, especially in the context of SMEs where it can be especially difficult to organise cover for people who are off sick or underperforming due to mental health difficulties.

Prevention, early recognition and treatment of anxiety and depressive disorders are crucial aspects in improving prognosis (Craske and Stein, 2016; Kraus et al., 2019; Olobuka et al., 2018). In line with previous data that depression is undertreated (Thornicroft et al., 2017), in the study by Sørensen et al. (2019), 70% of those who had a clinical or subclinical mental disorder had never pursued or received treatment. These data highlight the imperative demand to provide workplace interventions for prevention, identification and early treatment of depression and anxiety, in people who would otherwise not seek help. Future interventions could combine programmes delivered through the workplace with the use of more specialised treatment or local health resources for more severe cases, similar to the model used in some studies identified (Blonk et al., 2006; Demou et al., 2018; Sørensen et al., 2019). Another interesting finding comes from the study by Blonk and colleagues (Blonk et al., 2006), in which the population were on sick leave with adjustment disorders. While both CBT-based interventions showed no difference in their effectiveness in reducing symptoms, the intervention which directly focused on return to work through advice on work processes achieved a significantly quicker return to work. This suggests that interventions in SME workers on sick leave should have return to work as a specific treatment objective.

A strength of this review is the grey literature search in addition to our systematic search of a number of databases, as well as two specific occupational health databases, meaning we have aimed to include all possible research on this topic. Another strength is the diversity of geographical regions represented, suggesting that interventions for SME workers are acceptable in different cultural and socioeconomic areas. However, this work also has some limitations due to the small number of studies identified and methodological issues, due to which it was not possible to carry out a meta-analysis. Of importance is the lack of studies focusing on suicidal ideation and behaviour, or clinical anxiety and depression, as well as the reliance on self-report measures, and the high attrition. Several studies lacked a control group, which is necessary to test the effectiveness of the interventions. In those trials which included a control group, effect sizes of the beneficial outcomes of the intervention group compared with the control group may have been inflated by placebo responses from controls (Gold et al., 2017). Double blinding is difficult in this type of intervention and was not achieved by any of the studies, and thus represents a source of bias. There is also a risk for publication bias, which may further have biased the results, which we attempted to mitigate by searching for unpublished data.

These limitations reflect flaws already highlighted in previous reviews on the effectiveness of workplace-based interventions in companies of all sizes, namely high heterogeneity in the type, length and mode of intervention, high risk of bias in the included studies (Carolan et al., 2017a; Wagner et al., 2016; Yunus et al., 2018), and a lack of focus on clinical diagnoses of anxiety or major depressive disorders (Dietrich et al., 2012).

Putting the results into context, the preliminary data indicate that psychosocial interventions for depression and anxiety are feasible and acceptable in the SME workplace, as they are in larger workplaces, but there may be key differences in how these interventions should be designed and delivered in order to adapt to the specific SME context. Further research should focus on assessing the effectiveness of CBT or other evidence-based psychological interventions in SME employees with clinical anxiety and depression using large-scale RCTs. Research on the most cost-effective mode of delivery, as well as increasing engagement and reducing attrition, could improve outcomes. A greater focus on financial and occupational outcomes would help identify which

interventions are most cost-effective for SME companies with strained resources. Research into this area is especially timely given the general increase in symptoms of depression and anxiety caused by the COVID-19 pandemic (COVID-19 Psychological Research Consortium, 2020), as well as the economic uncertainty in its wake (Nicola et al., 2020) disproportionately affecting SMEs (OECD, 2020).

To try to address this need, the MENTUPP intervention is being developed (<https://www.mentupproject.eu/>). MENTUPP is a project sponsored by a European Union H2020 grant, created with the primary aim of improving mental health in the workplace by developing, implementing and evaluating a multilevel intervention in SMEs, to reduce depression, anxiety and suicide, as well as non-clinical conditions such as burnout and stress, across EU countries and Australia.

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## Contributors

EA, UH, BLA and VP conceived the idea for the study. JMC, BH and BLA planned the study design. BH and IGC carried out the search and quality assessments with input from JCM. BH wrote the first draft of the report with input from BLA, JCM, IS, UH and EA. All authors contributed to the interpretation of findings and critical revision of the manuscript. All authors approved the final version of the manuscript for submission.

## Declaration of Competing Interest

We have no known conflict of interest to declare.

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## Dedication

This article is dedicated to our beloved colleague Allison Milner (1983–2019), who was the Deputy Head of the Disability and Health Unit at the Centre for Health Equity, Melbourne School of Population and Global Health (MSPGH) at the University of Melbourne, Australia and who passed away tragically in 2019. We lost a dynamic researcher who has made a difference to workplace suicide prevention, a mentor and teacher, a principled colleague, and a friend.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.jad.2021.04.071](https://doi.org/10.1016/j.jad.2021.04.071).

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