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REVIEW ARTICLE

# Indicated Prevention Interventions in the Workplace for Depressive Symptoms: A Systematic Review and Meta-analysis

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**Context:** Depressive symptoms are highly prevalent and cause substantive morbidities and loss of functioning among employees. Depression may be prevented at its early stages. However, there is a paucity of information regarding indicated preventive interventions for depression among employees. The objective of this review is to examine the effectiveness of indicated interventions for the reduction of depressive symptoms in the workplace.

**Evidence acquisition:** A systematic review and meta-analysis of articles published between January 2000 and September 2017 was conducted using major electronic databases, including PubMed/MEDLINE, PsycINFO, EMBASE, SOCINDEX, and ABI/ProQuest. Studies were selected based on a set of predefined inclusion criteria. Primary outcome measures were depressive symptomatology, and the interventions were preventive in nature. Studies were pooled based on the intervention type and the effect size was measured using the standardized mean difference.

**Evidence synthesis:** A computer and hand search of the literature yielded 4,462 papers, from which 16 trials were identified to be suitable for meta-analysis. Eight of 16 studies reported significant effects for workplace preventive interventions targeting depressive symptoms in which six were cognitive behavioral therapy (CBT)−based interventions and two were non−CBT-based interventions. Small to medium effect sizes were found for both CBT- and non−CBT-based interventions (standardized mean difference= −0.44, 95% CI= −0.61, −0.26, $I^2$=62.1% and standardized mean difference= −0.32, 95% CI= −0.59, −0.06, $I^2$=58%, respectively).

**Conclusions:** This review demonstrates that indicated interventions can significantly reduce the level of depressive symptoms among workers. The implementation of evidence-based workplace interventions should consequently be considered to prevent the development of depressive symptoms among employees.

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## CONTEXT

Depression is one of the most common mental disorders in the workplace,[1] and has a considerable impact on occupational functioning and productivity.[2] Despite an increase in mental health service use, data from various countries (U.S., Canada, England, and Australia) suggesting that there has not been measurable change at the population level with regard to the prevalence of major depression.[3] This lack of measurable change may partly be because of

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suboptimal quality of treatments and lack of interventions that are targeted to reduce incidence of depression through prevention. Efforts in early detection and prevention are needed to prevent the occurrence of depression.

The workplace, where a large proportion of the adult population spends most of their daily time, is an ideal setting for the prevention of depression.[4] Depression is prevalent in the workplace, and represents a substantive burden on society.[5,6] Employees with depressive symptoms report more days absent from work (absenteeism) and less productivity while at work (presenteeism) than those without depressive symptoms.[7–9] There is a pressing need for evidence-based workplace interventions from employers, as there are tremendous costs related to presenteeism and absenteeism incurred by depression. The prevention of depression at an early stage is therefore a matter of clinical and societal urgency. However, research evidence regarding early prevention has not been well synthesized. In the past decades, a number of workplace preventive interventions for depression have been developed, which have been found effective to reduce risk factors, strengthen protective factors, decrease depressive symptoms and disability, and prevent the onset of depression.[10–12] However, additional research is needed to establish which types of intervention, administered in which settings and aimed at which target populations are most effective in reducing depressive symptoms and preventing depression. From the public health point of view, interventions may be applied to an entire population (universal prevention), at-risk individuals based on specific characteristics (e.g., family history, age, or sex; selective prevention), or those with symptoms (indicated prevention).[13–16]

Considering the high prevalence of depressive symptoms among employees and the substantive burden on society, the present study focuses primarily on indicated prevention for individuals with symptoms of depression. Although there are reviews focused on universal preventive interventions for mental health issues,[17–23] there is a paucity of information regarding the effectiveness of indicated preventive interventions for depression among employees. Therefore, the objective of the study is to conduct a systematic review and meta-analysis on the effectiveness of indicated interventions for reducing depressive symptoms in the workplace.

## EVIDENCE ACQUISITION

### Study Design

This review was guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. A systematic review of the literature published between January 2000 and September 2017 was conducted in biomedical and psychosocial electronic databases, including Medline/PubMed, PsycINFO, EMBASE, SocINDEX, and ABI/ProQuest (database search strategies in Appendix Table 1, available online). Two authors performed the search on electronic databases with 95% level of agreement during screening of 136 of 4,462 articles. Other searching methods included screening references listed in relevant systematic reviews and identified articles (i.e., cross-referencing). Duplicates ($n$=56) were searched for and excluded, allowing for the obtainment of a final sample of references to be screened (Figure 1). References were independently screened by title and abstract and finally by reading full text, if needed. There were disagreements on 5% of the articles and discussions took place to achieve consensus between the two authors.

### Inclusion and Exclusion Criteria

Using the population, intervention (design), control, and outcome (PICO) approach, eligible studies met the following inclusion criteria: (1) the study population were employees aged ≥18 years with depressive symptoms; (2) studies were RCTs conducted at the workplace; (3) study control group interventions were either care as usual or wait-listed control groups; (4) the studies' primary outcome measure was depressive disorder or depressive symptomatology, assessed with a validated instrument; (4) the studies were published between January 2000 and September 2017; and (5) published in English.

Articles excluded from the review included articles considering volunteer work or unemployed participants, articles focusing on universal prevention, articles that examined outcomes other than depressive symptoms, and non-English publications.

### Data Extraction and Analysis

Two authors independently assessed each study included in the final sample (Table 1 provides details of included studies) using a data extraction sheet. Authors included relevant information regarding the study (publication year, sample size, population, design, intervention, follow-up period, and result). Data such as means, SDs, and number of participants were retrieved from articles and used to perform a meta-analysis. For articles with missing SD data, SDs were calculated on the basis of 95% CIs. The primary outcome was depressive symptom score, which was assessed using various psychometric scales. A meta-analysis was conducted using RevMan, version 5 and Stata, version 14.0 software, with pooled results expressed as the standardized mean differences (SMDs) with 95% CIs. SMDs were calculated as the effect-size measure, which is the difference in post-treatment means divided by the pooled SD, with adjustment for small sample bias (i.e., weights).[35] The random effects model was used for meta-analysis, assuming that each study included in the analysis has a study-specific true effect, which could be because of the between-study heterogeneity. In this study, the intervention efficacy is associated with lowered scores on depression measures. Having SMDs lower than zero indicates the degree to which the treatment is more efficacious than the control or wait-list group.[35]

The heterogeneity of the included studies was evaluated using the $I^2$ test. $I^2$ is the proportion of total variation attributable to between-study heterogeneity as opposed to random error or chance. An $I^2$ value of 0% denotes no observed heterogeneity, whereas, 25% is "low," 50% is "moderate," and 75% is "high"

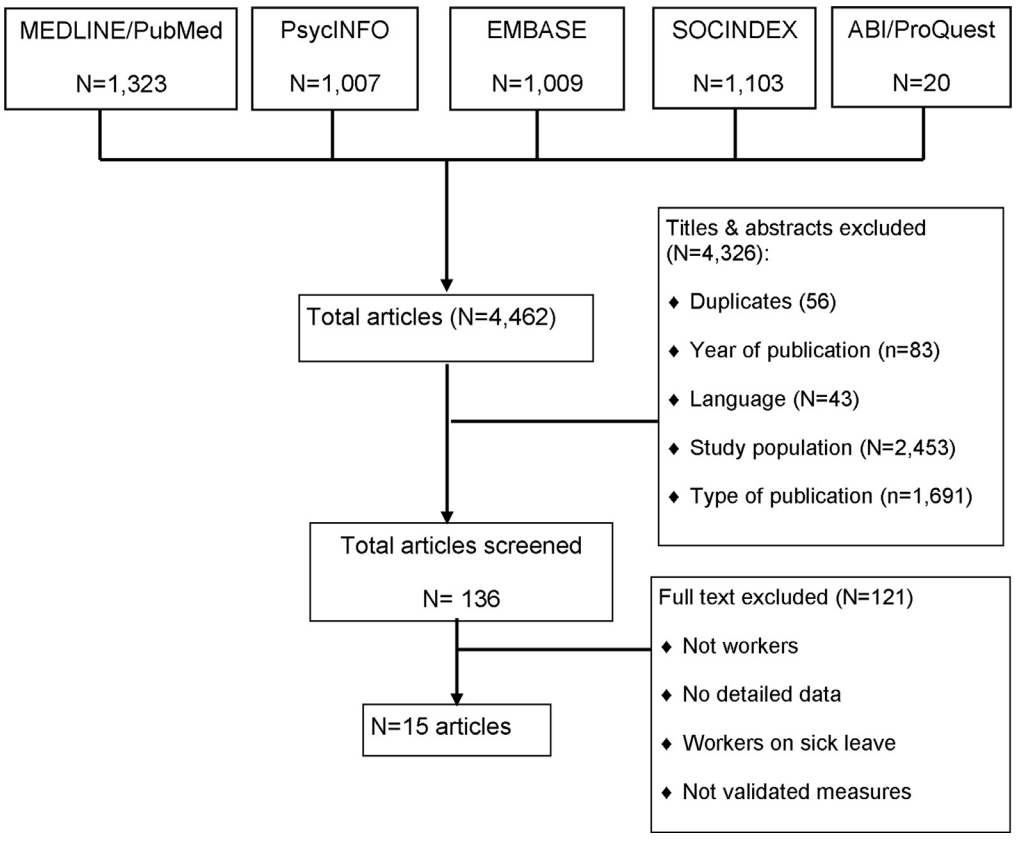


**Figure 1.** PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) diagram-flow chart of studies.

heterogeneity. Publication bias was assessed via the visual inspection of the funnel plot. Egger's linear regression model was also used to statistically test for funnel plot asymmetry.[36]

### Assessment of Risk of Bias of Individual Studies

The quality of the studies was assessed by using the Cochrane Collaboration's risk of bias tool.[37] Two authors independently assessed the risk of bias of the included studies as low, unclear, and high. Pretesting and evaluation were performed to achieve calibration during review process ($\kappa$=0.92). The following items were utilized in order to assess risk of bias in the included studies: 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), and other biases. The proportion of risk that came from studies at low, unclear, or high risk of bias for each item in the tool was also presented. It is difficult to apply double blinding in trials of psychological interventions; therefore, blinding was considered as positive if the assessor was blind.

## EVIDENCE SYNTHESIS

### Description of Studies

A computer and hand search of the literature yielded 4,462 papers, from which 136 full-text articles were reviewed and 15 RCTs were identified to be suitable for meta-analysis (Figure 1). The included studies used self-report scales, such as the Patient Health Questionnaire; Depression, Anxiety, and Stress Scales; Hamilton Anxiety and Depression Scale; Center for Epidemiologic Studies Depression Scale; Four-Dimensional Symptom Questionnaire; and Beck Depression Inventory, version 2. The presence of depressive symptoms was determined by the dimensional scales. Median follow-up time of the included articles was 4 months and ranged from 4 weeks[33] to 3 years.[31]

A brief summary of design, intervention content, relevant outcome measure or measures, and target population for each study included in the meta-analysis may be found in Table 1. Eight of ten studies delivered cognitive behavioral therapy (CBT) via telephone or the Internet[12,24–28,31,38] and the remaining two studies delivered CBT in person.[8,29] Two studies focused on enhancing mental health literacy,[27,29] two were exercise-based interventions,[10,11] and three were web-based self-help interventions.[25,33,38] The interventions used a variety of related techniques, including psychoeducation, work coaching, behavioral modification, stress management, CBT, and problem-solving therapy. The focus of these

**Table 1.** Summary of Characteristics of the Studies by Intervention Type

| First author, year, country | Subjects (sample size) | Design (follow-up) | Intervention | Content of intervention | Outcome measure | Results |
|---|---|---|---|---|---|---|
| CBT-based indicated prevention interventions | | | | | | |
| Adler, 2015, U.S.[24] | Middle-aged employees (*n*=167) | RCT (4 months) | Telephone-based WFI including CBT, work coaching, and modification, care coordination | The intervention had eight-session, 50-minute twice monthly telephone intervention provided by Masters-level counselors | PHQ-9 | The WFI was effective in reducing depressive symptoms (SMD= −0.87, 95% CI= −1.18, −0.55) |
| Furukawa, 2008, Japan[12] | Employees in the manufacturing company (*n*=118) | RCT (4 months) | Telephone CBT (tCBT) and EAP | The telephone CBT is a structured, manualized eight-session program including stress diagnostics and reduction program on the web, telephone consultation, and e-mail consultation | BDI-II | Remote CBT, including tCBT was effective in reducing depressive symptoms SMD= −0.70, 95% CI= −1.07, −0.33) |
| Geraedts, 2014, Netherlands[25] | Employees (*n*=231) | RCT (12 months) | Web-based, guided self-help intervention/ Happy@Work | PST and cognitive therapy, and coaching | CES-D | A worker-directed, web-based, guided self-help intervention was not effective in reducing depressive symptoms (SMD= −0.24, 95% CI= −0.24, 0.02) |
| Grime, 2004, UK[26] | Public-sector employees (*n*=48) | RCT (6 months) | Computerized CBT at work "Beating the blues (BTB)" | BTB, an interactive computerized CBT program, was loaded onto a standalone computer in a private room in the Occupational Health Department | HADS (Depression section) | BTB was not effective in reducing depressive symptoms post-intervention (SMD= −0.83, 95% CI= −1.50, −0.17) |
| Imamura, 2016, Japan[27] | Employees who had low to higher risk for depression (*n*=1,236) | RCT (4 months) | An information website for stress and depression including psychoeducational information and CBT for depression | Looking at the University of Tokyo School of Medicine site/University of Tokyo website for stress management and education on depression | BDI-II | A web-based psychoeducation approach was not effective in reducing depressive symptoms (SMD=0.03, 95% CI= −0.41, 0.47) |
| Kojima, 2010, Japan[28] | Employees (*n*=261) white-collar office workers at a nonferrous metal manufacturer | Controlled clinical trial (3 months) | CBT training using brief e-mail sessions in the workplace | The intervention group was offered participation in a group session with CBT specialists (one psychiatrist, one psychotherapist), and e-mail sessions were conducted by one occupational physician and three occupational healthcare nurses. Prior to the study, the occupational physician and nurses received a 3-hour lecture about CBT from the CBT specialist, and three e-mail sessions with occupational healthcare staff | CES-D | The intervention was effective in reducing depressive symptoms (SMD= −0.37, 95% CI= −0.61, −0.12) |

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**Table 1.** Summary of Characteristics of the Studies by Intervention Type (*continued*)

| First author, year, country | Subjects (sample size) | Design (follow-up) | Intervention | Content of intervention | Outcome measure | Results |
|---|---|---|---|---|---|---|
| Lexis, 2010, Netherlands[8] | Employees working in an office environment (*n*=139) | RCT (12 months) | Preventive intervention consisted of a psychological treatment based on the principles of PST and CBT | The intervention consisted largely of CBT/PST with 10 to 12 sessions | BDI-II | CBT/PST was not effective in reducing depressive symptoms (SMD= −0.41, 95% CI= −0.75, −0.08) |
| Mino, 2006, Japan[29] | Office employees (*n*=58) | RCT (3 months) | The stress-management program included lectures on the perception of stress, measures to cope with it, stress management recording sheets, and e-mail counseling | A stress-management program, which consisted of a 2-hour lecture, was given on work-related stress and health to promote behavioral and cognitive changes using a cognitive-behavioral program | CES-D | Stress management program was not effective in reducing depressive symptoms (SMD= −0.34, 95% CI= −0.90, 0.22) |
| Phillips, 2014, UK[30] | Employees (*n*=637) | RCT (12 weeks) | Computerized CBT intervention (MoodGYM) | MoodGYM is a freely available course developed at the Australian National University that allows participants to proceed at their own pace over five, 1 hour-long modules, usually taken weekly | PHQ-9 | No evidence that MoodGYM was superior to the control group in terms of reducing depressive symptoms (SMD= −0.14, 95% CI= −0.41, 0.12) |
| Ruwaard, 2007, Netherlands[31] | Employees with subclinical depression (*n*=239) | RCT (3 years) | E-mailed standardized CBT of work-related stress | The therapists were 25 doctoral students in clinical psychology and 1 postgraduate student | DASS (depression section) | E-mailed standardized CBT was effective in reducing depressive symptoms (SMD= −0.64, 95% CI= −0.94, −0.35) |
| Non−CBT-based indicated prevention interventions | | | | | | |
| Atlantis, 2004, Australia[10] | Casino employees (*n*=73) | RCT (6 months) | Supervised aerobic and weight-training exercise, and behavior modification | Supervised moderate- to high-intensity aerobic exercise for minimum 20-minute duration, 3 days/week on treadmill, bicycle, stepper, or concept II rowing ergometer machines | DASS (depression section) | The intervention was not effective in reducing depressive symptoms compared to the wait-list control (SMD= −0.30, 95% CI= −0.90, 0.29) |
| De Zeeuw, 2010 Netherlands[11] | White-collar employees (*n*=30) | Pilot RCT (10 weeks) | Supervised exercise | Exercise group attended two supervised exercise sessions per week for 10 consecutive weeks | PHQ-9 | Workplace exercise was effective in reducing depressive symptoms (SMD= −1.32, 95% CI= −2.16, −0.48) |
| Bond and Bunce, 2000, UK[32] | Employees in large media organization (*n*=90) | RCT (27 weeks) | Acceptance and Commitment Therapy (ACT) and Innovation Promotion Program (IPP) | Enhancing an individual's ability to cope with work-related strain, and helping individuals identify and innovatively change causes of occupation strain | BDI | ACT and IPP were not effective in reducing depressive symptoms (SMD= −0.11, 95% CI= −0.70, 0.49) and (SMD= −0.03, 95% CI= −0.64, 0.59), respectively |

(*continued on next page*)

**Table 1.** Summary of Characteristics of the Studies by Intervention Type (*continued*)

| First author, year, country | Subjects (sample size) | Design (follow-up) | Intervention | Content of intervention | Outcome measure | Results |
|---|---|---|---|---|---|---|
| van Straten, 2008, Netherlands[33] | Employees (*n*=213) | RCT (4 weeks) | Web-based self-help intervention based on PST | The web-based course took 4 weeks. Every week an automated e-mail was sent to the participants to explain the contents and exercises for the coming week. In addition, trained psychology students who offered feedback by e-mail on the completed exercises supported participants | CES-D | Web-based self-help interventions of PST were effective in reducing depressive symptoms (SMD= −0.50, 95% CI= −0.77, −0.22) |
| Vuori, 2012, Finland[34] | Employees (*n*=718) | RCT (7 months) | A resource-building intervention aimed at promoting employees' career management and resilience | One-week resource-building intervention: career management and mental health workshop using active learning process, social modeling, gradual exposure, and role playing | BDI | The program significantly decreased depressive symptoms, but not significantly different from the control group (SMD= −0.14, 95% CI= −0.30, 0.02) |

BDI-II, Beck Depression Inventory, version 2; CAU, care as usual; CBT, cognitive behavioral therapy; CES-D, Center for Epidemiological Studies Depression Scale; DASS, Depression, Anxiety, and Stress Scales; 4DSQ, Four-Dimensional Symptom Questionnaire; EAP, employee assistance program; HADS, Hospital Anxiety and Depression Scale; PHQ-9, Patient Health Questionnaire; PST, problem-solving treatment; SMD, standardized mean difference; WFI, work-focused intervention.

intervention sessions was usually on either stressful situations encountered in the workplace (i.e., coping skills) or more general career management. Nine of 15 studies reported a significant effect for workplace preventive interventions targeting depression.

## Meta-analysis of the Effect of Preventive Interventions on the Development of Depression

Fifteen primary RCTs (16 analyses) with a total of 2,522 participants (intervention: *n*=1,321, and control: *n*=1,201 group) were included in the meta-analysis. SMDs from the identified interventions ranged from 0.03 (negative effect) to −1.32 (positive effect). Eight of 16 analyses reported significant effects for workplace preventive interventions targeting depression. Of which, six were CBT-based interventions and two were non−CBT-based interventions. Supervised exercise containing two sessions per week for 10 consecutive weeks was found to be the most effective preventive intervention for depression among employees (SMD= −1.32, 95% CI= −2.16, −0.48) compared with other trials.[11] Overall SMD between the intervention and control groups was −0.40 (95% CI= −0.54, −0.25, $I^2$=62.4%), demonstrating that the workplace indicated interventions significantly improved depressive symptoms among employees.

Figure 2 presents the SMDs at post-test and the pooled effect size using the random effects model, stratified by intervention type. Medium effect sizes were found for both CBT- and non−CBT-based interventions (SMD= −0.44, 95% CI= −0.61, −0.26, $I^2$=62.1%, and SMD= −0.32, 95% CI= −0.59, −0.06, $I^2$=58%, respectively).

Furthermore, the authors used meta-regression to examine whether there was an association between a range of variables and intervention efficacy for preventing depression. At post-test, meta-regression revealed that the mode of intervention (telephone, computer, and in-person) affected intervention efficacy at post-test. Interventions delivered via telephone had greater reductions in depressive symptoms in the workplace (SMD= −0.80, 95% CI= −1.04, −0.56, $I^2$=1%), followed by computer-based interventions (SMD= −0.36, 95% CI= −0.53, −0.18, $I^2$=13%), and in-person interventions (SMD= −0.17, 95% CI= −0.46, 0.13, $I^2$=18%). No other study variables were found to affect the intervention efficacy. The authors conducted a sensitivity analysis by different scales and biases (i.e., high risk versus low risk), and found no significant differences in conclusions subsequent to sensitivity analysis.

## Risk of Bias Assessment of Included Trials

Figures 3A and 3B present the assessment of bias as percentages within and across the studies. The majority of the 15 trials were found to be at low risk of bias for

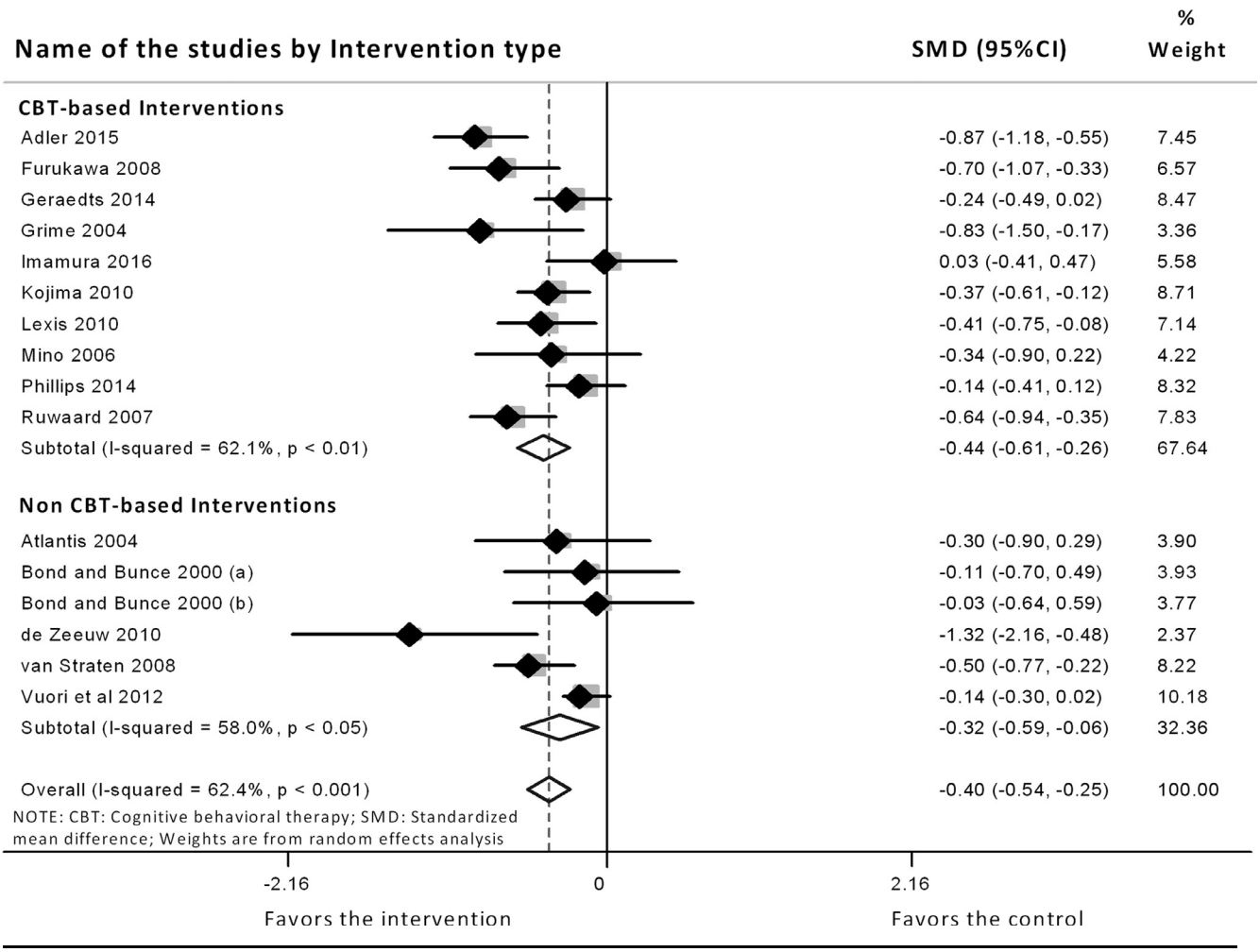


**Figure 2.** Meta-analysis examining the impact of workplace preventive interventions on depressive symptoms.

randomization sequence generation ($n$=14, 93.3%), selective reporting ($n$=14, 93.3%), and attrition bias ($n$=9, 60%). However, only a small proportion of trials were at low risk of bias for blinding of participants and personnel ($n$=2, 13.3%) and blinding of outcome assessment ($n$=1, 6.7%). The attrition bias appeared to be small in the included studies. The funnel plot of published studies regarding preventive interventions for depression in the workplace is shown in Appendix Figure 1 (available online). The symmetrical distribution of the studies in the funnel plot and Egger's test ($p$=0.295) suggests a lack of publication bias.

## DISCUSSION

The increasing cost associated with depression in the workplace is becoming a major public health issue. This review summarized the range of workplace preventive interventions targeting depressive symptoms and examined their effectiveness in preventing the development of depression among employees. Fifteen RCTs examined indicated preventive interventions for reducing depressive symptoms. Both CBT- and non–CBT-based (e.g., exercise) interventions significantly reduced levels of depressive symptoms among employees (SMD= −0.44 and SMD= −0.32, respectively).

The meta-analysis revealed a medium effect size for both CBT- and non–CBT-based interventions, suggesting that the indicated interventions could have a positive impact on preventing the development of depression among employees. Conjointly, the results of this review have implications for the role of interventions in the reduction of the impact of depression on adverse work outcomes as high-quality intervention for depression has been associated with fewer sickness absences and less presenteeism.[39] Some studies reported that reduction of depression symptoms alone may not be sufficient to restore ability to work, because many patients

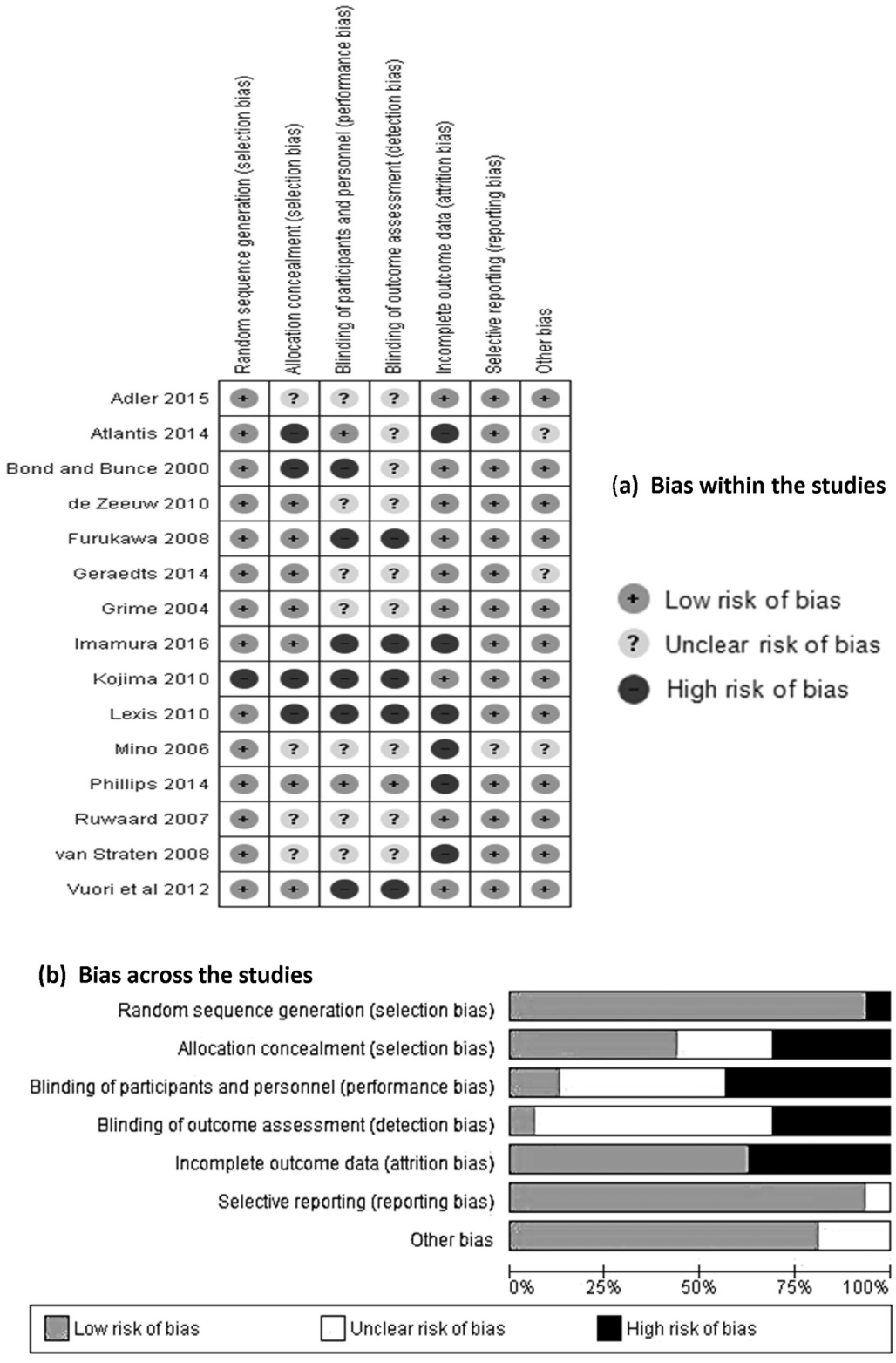


**Figure 3.** Methodological quality graph: reviewers' risk assessment of bias presented within and across the studies.

experience residual functional limitations.[18,40,41] On the other hand, interventions focusing on psychoeducation via the Internet might be useful for increasing knowledge about depression among employees, but it does not produce meaningful impacts on symptom reduction and functional improvements.[27] The meta-analysis of non–CBT-based interventions revealed that interventions, such as exercise and self-help interventions, are effective in reducing depressive symptoms among employees. The interest in both leisure and workplace physical exercise interventions has continued to decrease over recent decades in most developed countries,[42,43] but such lifestyle interventions may become increasingly important in future workplace mental health strategies.[10,11] For example, in a study by Atlantis et al.[10] exploring the effects of a workplace exercise program—there was a 26% reduction in depressive symptoms in the exercise group compared with the control group—but more research is needed on the level of exercise required to influence depressive symptoms. Preventive interventions usually aim to either reduce exposure to risk factors or increase protective or resilience factors for depressive disorders.[10,11] However, there is a paucity of RCTs focusing on modifiable work-related factors (e.g., job demand, job control, and social support). In practice, many workplaces have opted for attempting to enhance their workers' resilience rather than modifying risk factors. There is also a paucity of high-quality RCTs on the effectiveness of workplace resilience and supervisor training in preventing and early detection of depression among employees.

The effect sizes observed for both CBT- and non–CBT-based indicated preventions were small to medium effect, and generally higher than previously reported effect sizes from the meta-analyses of universal interventions.[19] In addition, the results revealed that interventions delivered virtually via telephone or Internet had higher effect sizes in reducing depressive symptoms compared with in-person interventions. This highlights the fact that the stigma of mental illness might have a negative impact on the utilization of the interventions at work. The results also have implications from implementation perspective as computer-based and telephone-based programs are in general cheaper and therefore more sustainable, compared with programs delivered by health professionals in person. Because of the advantages of web-based mental health programs (e.g., timely access, confidentiality, low costs), a number of web-based mental health programs and apps have been developed. Future studies are needed to produce evidence about the effectiveness of web-based programs and apps as the means of indicated prevention of workplace depression, as well as return on investment. As most of the interventions were designed at the individual level, it is possible that interventions aimed at job design and organization-level interventions may produce a larger effect size. Developing continuous and sustainable initiatives to promote workplace mental health requires practitioners and organizations to move from unimodel interventions (either individual or organizational approaches) to multimodel interventions (i.e., using a combination of approaches).[44–46]

## Limitations

The main strengths of this review are the very detailed systematic search strategy, clearly defined inclusion criteria, and the objective assessment of the methodologic rigor of each included study. Despite these strengths, there are a number of limitations to this review. Although this review identified many positive findings, it is also important to highlight the significant gaps identified. First, the authors observed small to medium effect sizes, especially for non-CBT interventions, which seem driven by two studies of limited methodologic quality. However, a small effect applied to a larger number of people may produce overall greater improvement in population health than a larger effect applied to a smaller, targeted group of people. Second, given that the study populations were randomized, the meta-analysis was conducted under the assumption that there were no baseline differences between the control and intervention groups. Although the majority of studies in this meta-analysis assessed and reported no significant differences among participants at the baseline, there were 11 studies that did not report statistical test results ($p$-values), which might induce bias. Given the small observed differences, the authors believe that it would not affect the validity of the results. Third, 43 articles were excluded by language, which might induce language bias. However, the authors believe that the majority of biomedical literature is published in English language journals, which are thought to include the majority of relevant articles. This issue was also considered on the basis of practicality (e.g., translational expenses). Fourth, as self-report measures were used in all studies, the conclusions are limited to symptom reduction rather than clinical diagnosis. Furthermore, the combination of self-report symptoms, along with the fact that participants were not blinded to the type of intervention they had received, may have introduced reporting bias via the Hawthorne effect. As most of the trials used multicomponent interventions with CBT as one component, the effectiveness could have been driven by CBT or the other intervention components. Finally, some of the identified trials used composite measures of

depression and anxiety (e.g., Depression, Anxiety, and Stress Scales; and Hamilton Anxiety and Depression Scale), whereas this study solely used the items that were associated with depression for this specific study.

## CONCLUSIONS

Depression in the working population and the associated disease burden continue to be a major public health challenge. Although attempts have been made to address the issue of depression in the workplace, there is limited evidence that clearly supports the effectiveness of workplace interventions for depression. The results from this meta-analysis demonstrated a medium effect size for indicated preventive intervention for reducing depressive symptoms among employees, suggesting that there are a number of evidence-based preventive interventions for reducing depressive symptoms that can be implemented in the workplace. However, high-quality RCTs, especially interventions focusing on organization-level factors including supervisor training on prevention and early detection are needed across the workplace mental health field to determine the effectiveness of targeted, multimodal indicative interventions.

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## SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at https://doi.org/10.1016/j.amepre.2018.08.027.

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