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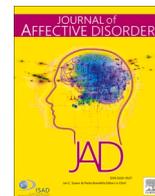
Review article

Cognitive, behavioural or cognitive-behavioural self-help interventions for subclinical depression in older adults: A systematic review and meta-analysis

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A B S T R A C T

Background: Subclinical depression is a risk factor for the development of major depression in older adults. We aimed to determine the effectiveness of pure self-help or self-help with minimal support to reduce depressive symptoms and to prevent the onset of major depression in this population.
Methods: This was a systematic review and meta-analysis of trials that used self-administered cognitive, behavioural or cognitive-behavioural interventions for older adults with subclinical depression compared to control groups. Medline, Embase, PsycInfo and Cochrane databases were searched for relevant studies.
Results: We analysed eight trials involving 1449 participants. A small but significant effect favouring the intervention was found at short-term [$d = 0.33$; 95% CI (Confidence Interval): 0.20–0.47] and at long-term ($d = 0.22$; 95% CI: 0.04–0.40) for depressive symptoms. None of the studies looked at the preventive effect of self-help interventions in reducing the probability of a subsequent diagnosis of major depression.
Limitations: The low number of studies meant that it was not possible to test for publication bias. The absence of pre-published protocols for many of the studies meant that there is a possibility of selective reporting bias for some of the primary studies.
Conclusions: There is some evidence that cognitive-behavioural self-help interventions may reduce depressive symptoms in older adults with subclinical depression. However, no study examined whether the intervention had a preventative effect in reducing the likelihood of a subsequent diagnosis of major depression.

1. Introduction

Depression is a common psychiatric disorder among older adults, with a prevalence of 10 to 20% (WHO, 2017). Depression in older adults is associated with several negative consequences, such as reduced quality of life, difficulties with activities of daily living, physical comorbidities, cognitive impairment and premature mortality (Avasthi and Grover, 2018; Zis et al., 2017). There is also a well-established association between depression and frailty in older adults (Soysal et al., 2017).

One of the main risk factors for the development of a major depression is subclinical or subthreshold depression (Cuijpers and Smit, 2004; Judd et al., 1998). People with subthreshold depression have some symptoms of depression, but not enough to meet criteria for major

depressive disorder (Cuijpers and Smit, 2004). Nearly half of people aged over 60 years with subclinical depression develop a formal diagnosis of major depressive disorder within a year (Dozeman et al., 2010). Furthermore, older adults with subclinical depression report functional impairment similar to those with major depressive disorder (Haigh et al., 2018).

For these reasons, there is an interest in preventive approaches for depression with the focus on subclinical depressive symptoms (Cuijpers et al., 2008; Gilbody et al., 2017). Indicated or selective prevention involves identifying those at risk of depression, such as people with subclinical symptoms. There is evidence that provision of preventive interventions can be effective (Cuijpers et al., 2021). There is limited evidence for the use of antidepressants for subclinical depression. While the evidence of psychological treatments for subclinical depression is

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also limited, there is some indication that they may be of use for older adults (e.g., Gilbody et al., 2017). The limited evidence for antidepressants for subclinical depression combined with potential side effects of such medication means that they are not recommended as a first-line intervention for subclinical depression. Psychological treatments, therefore, may be more appropriate (Avasthi and Grover, 2018; Schellander and Donnerer, 2010). Nevertheless, psychological interventions with substantial support from a practitioner are generally reserved for people with more severe presentations (NICE, 2009).

Self-help psychological interventions with no or minimal professional support, therefore, may be an alternative (Anderson et al., 2005; Gilbody et al., 2017; McKendree-Smith et al., 2003). Pure self-help interventions are defined as treatments that are completely self-administered with no professional or paraprofessional support. Minimal-contact self-help is defined as a self-help treatment that is self-administered with some, though very limited, support from a professional or paraprofessional, for example, to solve practical problems (Newman et al., 2003). These pure or minimal support approaches can be contrasted with guided self-help in which there is more support from a professional or paraprofessional.

Some meta-analyses have found a large effect size for self-help interventions for depressive symptoms compared with control groups (Gellatly et al., 2007; Van't Hof et al., 2009), and also specifically for older people (McKendree-Smith et al., 2003), though the majority of the evidence is for guided self-help approaches, which may involve substantial help from and contact with a professional or paraprofessional. The potential role of pure or minimal support self-help interventions as a preventative approach for at risk older adults with subclinical depression is as yet unclear. We cannot assume that self-help interventions in the absence of such contact and help will be as effective, because the contact and help may be necessary for the beneficial effect. There is a need, therefore, to clarify whether pure or minimal support self-help interventions are effective for the prevention of depression in older adults. If such approaches are effective, they provide a method of rolling out at scale an intervention to reduce the occurrence of depression in this population.

The aim of the present systematic review was to assess the effectiveness of pure or minimal support self-help interventions in reducing subclinical symptoms of depression in older adults when compared with control conditions in the short and in the long-term. Furthermore, we also aimed to study the differential effects of pure and minimal contact self-help.

2. Methods

2.1. Protocol

The review is reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations (Moher et al., 2009); the protocol for the systematic review was registered with PROSPERO (CRD42021253083).

2.2. Search strategy

Medline, Embase, PsycInfo and Cochrane databases were searched from their inception to July 2021. The search strategy used combinations of terms for 'subclinical depression' ('subthreshold depress*' or 'sub-threshold depress*' or 'subclinical depress*' or 'sub-clinical depress*' or 'low depress*' or 'mild depress*' or 'minor depress*' or 'low mood') and 'self-help' ('self-help treatm*' or 'self-help therap*' or 'self-help intervent*' or 'minimal therap*' or 'minimal treatm*' or 'minimal intervent*' or 'minimal contact' or 'self-administrated' or 'bibliotherap*'). No relevant thesauri terms were found that were specific to the 'subthreshold' or 'self-help' concepts.

2.3. Selection of studies

Studies were eligible if they met the PICOS inclusion criteria outlined in the protocol (Moher et al., 2009). Population (P): older adults (aged 60 and over) with subclinical (subthreshold) depression, established preferably as a diagnosis made according to a recognised diagnostic system (DSM, ICD). In the absence of a diagnosis, studies were included if at least 90% of the sample had baseline depressive symptoms within the mild range on a standardised self-report measure and below the clinical cut-off for depression. Intervention (I): self-help for depression based on cognitive, behavioural or cognitive-behavioural treatments. Such interventions could be based on written materials, technology-enabled interventions, such as internet CBT or via a mobile device, and face-to-face interventions involving minimal contact. Self-help was operationalised as those interventions entirely self-administered (pure self-help) or with a professional or (paraprofessional) available in a maximum of 3 h or sessions which is considered minimal-contact self-help according to the definition used by Newman et al. (2003); Comparator: (C) non-active comparator such as treatment as usual or wait-list. Outcome (O): reported symptoms of depression. Study design (S): randomized controlled trails (RCTs).

2.4. Data extraction

Data from the included studies were extracted into a structured summary table. Studies were classified according to the type of self-help intervention (pure or minimal contact as defined above), the type of subclinical depression assessment (diagnosis or severity measure), and timing of outcome measurement (short-term: <6 months; long-term: >6 months). Information extracted also included: authors; date of publication; country where the study was performed; type of control condition; primary symptom outcome measure; length of the intervention until post-treatment assessment; length of follow-up assessments if reported; number of participants randomized per condition (samples); mean age of participants; and percentage of female participants.

2.5. Risk of bias assessment

Risk of bias was assessed using the Cochrane Collaboration 'Risk of Bias' tool (Higgins and Green, 2011), which allows researchers to identify the adequacy of the random sequence generation, allocation concealment, the blinding of participant and personnel, the blinding of outcome assessment, how incomplete outcome data are addressed, the presence of selective reporting bias, and the presence of other biases.

2.6. Analytic procedure

2.6.1. Calculation of effect sizes

For each study, Cohen's *d* (bias corrected) was calculated (Hedges, 1981) as a measure of the differences between the standardised mean changes (pre-post) of the experimental and control groups (Becker, 1988). We used data from an intention-to-treat analysis rather than data from participants who completed the study if both were reported. The effect size was calculated for the experimental and control group of each of the studies. According to Cohen (1988), values close to 0.2 indicate small effects, values close to 0.5 indicate moderate effect, and those close to 0.8 or more indicate large effect. The 95% confidence intervals for the effect sizes were also calculated.

2.6.2. Meta-analytic procedure

Pre-planned analyses examined the effect of self-help compared to control interventions at short-term (<6 months) and at long-term (>6 months). The meta-analyses were carried out using Comprehensive Meta-Analysis Software (version 3.3). A random effects model was used. Effect size heterogeneity was analysed by means of Q and I^2 statistics. The Q statistic indicates whether the heterogeneity is significant and I^2

shows the percentage of heterogeneity. I^2 values around 25%, 50%, and 75% indicate low, moderate, and high heterogeneity, respectively.

2.6.3. Subgroup analyses

Comparative analyses of the subgroups were performed using a mixed-effects model. The aim of these analyses was to assess for differences in effect size related to the type of self-help (pure vs. minimal) and the baseline assessment of sub-clinical depression (diagnostic system vs. cut-off point on severity measure).

2.6.4. Publication bias

The presence of publication bias could not be examined due to an insufficient number of studies included in the analyses.

3. Results

3.1. Study selection

The flowchart outlining the search process is shown in Fig. 1. Nine publications met the inclusion criteria. One publication (Spek et al., 2008) provided follow-up data from an included trial (Spek et al., 2007); therefore, we considered these two publications as one study; there were, therefore, eight included studies.

3.2. Description of included studies

Details of the included studies are provided in Table 1.

3.2.1. Samples

Six studies (Almeida et al., 2020; Dozeman et al., 2011; Gilbody et al., 2021; Joling et al., 2011; Spek et al., 2007; Van der Aa et al., 2015) used an intention-to-treat analysis. The studies included a total of 1449 participants [$N = 723$ (49.9%) received self-help intervention, $N = 726$ (50.1%) received control]. The sample size of the included studies ranged from 26 patients (Moss et al., 2012) to 332 patients (Almeida et al., 2020). The mean age of the patients was 75 years and a total of 68.6% were females.

3.2.2. Country of origin

Four studies were conducted in the Netherlands (Dozeman et al., 2011; Joling et al., 2011; Spek et al., 2007; Van der Aa et al., 2015), and one each in Australia (Almeida et al., 2020), Norway (Boen et al., 2012), the United States (Moss et al., 2012) and the United Kingdom (Gilbody et al., 2021).

3.2.3. Type of clinical assessment, control condition and self-help

Most of the studies (Almeida et al., 2020; Dozeman et al., 2011; Gilbody et al., 2021; Joling et al., 2011; Spek et al., 2007; Van der Aa et al., 2015) used a diagnostic system (DSM) to establish subclinical depression; the remaining two studies (Boen et al., 2012; Moss et al., 2012) used scores on a severity rating scale. Three studies (Boen et al., 2012; Moss et al., 2012; Spek et al., 2007) used pure self-help, while five studies (Almeida et al., 2020; Dozeman et al., 2011; Gilbody et al., 2021; Joling et al., 2011; Van der Aa et al., 2015) used self-help with minimal contact. In two studies, minimal contact consisted of two to three brief (10–30 min) telephone calls (Almeida et al., 2020; Gilbody et al., 2021).
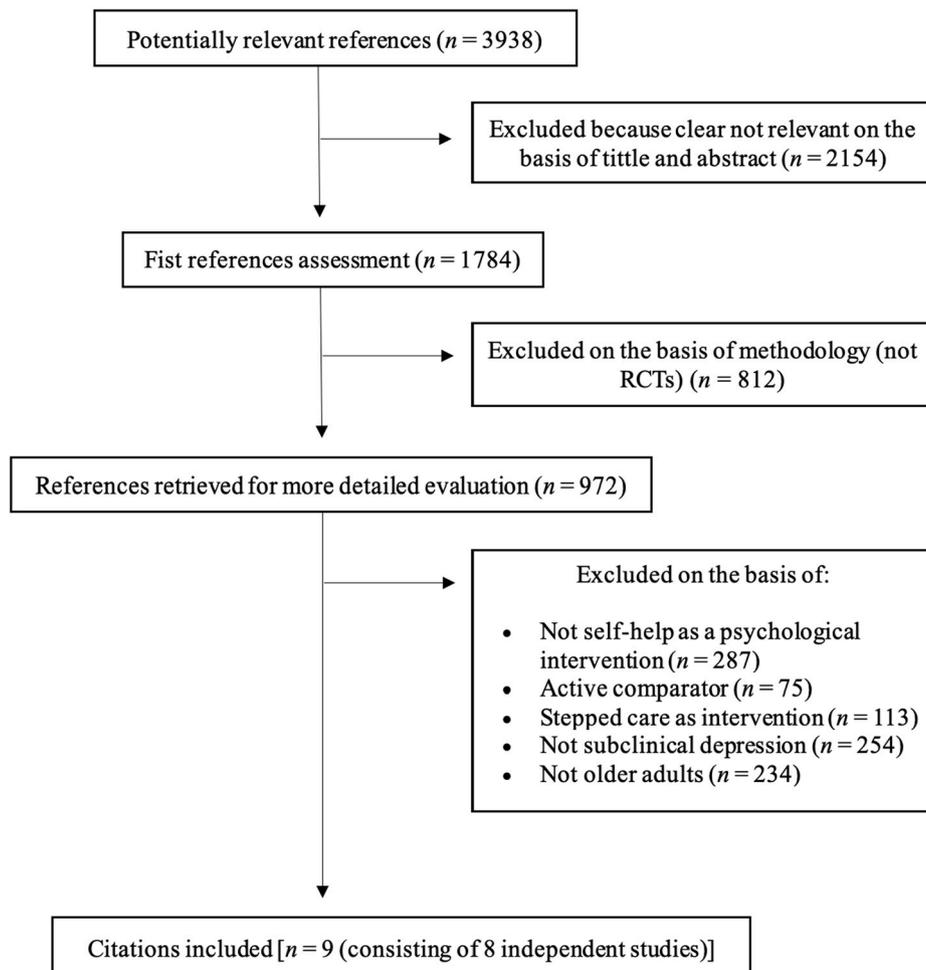

Fig. 1. Results of literature searches and selection of included RCTs.

Table 1
Details of included studies.

Trial			Conditions		Measures	Post-test	Follow-up	Samples			Age	% Female	Quality assessment						
Reference	Country	Clinical assessment	Type of control	Type of self-help	Depressive symptoms			ITT	E	C			a	b	c	d	e	f	g
Almeida et al. (2020)	Australia	DSM-5	Usual care	Minimal	PHQ-9	26 weeks	52 weeks	Yes	154	153	>65	78.5	+	+	-	+	+	+	+
Boen et al. (2012)	Norway	HSCL-10	No treatment	Pure	BDI	48 weeks	#	No	37	55	>65	57.1	+	?	-	+	-	+	+
Dozeman et al. (2011)	Netherlands	DSM-IV	Usual care	Minimal	CES-D	4 weeks	#	Yes	28	27	84	74	+	+	-	+	+	+	+
Gilbody et al. (2021)	United Kingdom	DSM-IV	Usual care	Minimal	PHQ-9	17 weeks	52 weeks	Yes	172	160	74	55	+	+	-	+	+	+	+
Joling et al. (2011)	Netherlands	DSM-IV	Usual care	Minimal	CES-D	12 weeks	#	Yes	86	84	81.5	73.6	+	?	?	?	+	-	+
Moss et al. (2012)	USA	GDS	Wait-list	Pure	CES-D	4 weeks	#	No	13	13	77.5	76.9	+	+	-	+	-	-	+
Spek et al. (2007, 2008)	Netherlands	DSM-IV	Wait-list	Pure	BDI	10 weeks	48 weeks	Yes	102	100	60	63.3	+	+	-	?	+	-	+
Van der Aa et al. (2015)	Netherlands	DSM-IV	Usual care	Minimal	CES-D	24 weeks	#	Yes	131	134	73.7	70	+	+	+	+	+	+	+

Notes: Trial – DSM = Diagnostic and Statistical Manual of Mental Disorders; GDS = Geriatric Depression Scale; HSCL = Hopkins Symptom Checklist for Depression; USA = United States of America. Measures – BDI = Beck Depression Inventory; CES-D = Center for Epidemiologic Studies Depression Scale; GDS = Geriatric Depression Scale; HRSD = Hamilton Rating Scale for Depression; PHQ = Patient Health Questionnaire; # = Not available. Samples – C = Control; E = Experimental; ITT = Intention to Treat. Quality assessment – a = random sequence generation; b = allocation adequately concealed; c = blinding of participants and personnel; d = blinding of outcome assessment; e = incompletely data adequately addressed; f = no evidence of selective reporting; g = other biases; + = low risk (included information protecting against bias); – = high risk (did not protect against source of bias); ? = unclear risk of bias.

In the remaining three studies, minimal contact consisted of two or three brief phone calls and one or two short visits (Dozeman et al., 2011; Joling et al., 2011; Van der Aa et al., 2015). In all cases a professional or paraprofessional provided the support. The support was designed to check that the materials had been read, to offer practical advice and problem solve; no psychotherapeutic techniques were used. Five studies (Almeida et al., 2020; Dozeman et al., 2011; Gilbody et al., 2021; Joling et al., 2011; Van der Aa et al., 2015) had usual care as the control condition, two (Moss et al., 2012; Spek et al., 2007) used wait-lists, and one (Boen et al., 2012) used a no-treatment condition.

3.2.4. Outcome measurement

Four studies (Dozeman et al., 2011; Joling et al., 2011; Moss et al., 2012; Van der Aa et al., 2015) used the Center for Epidemiologic Studies Depression Scale (CES—D), two studies (Boen et al., 2012; Spek et al., 2007) used the Beck Depression Inventory (BDI), and two studies (Almeida et al., 2020; Gilbody et al., 2021) used the Patient Health Questionnaire (PHQ-9). None of the studies used a diagnostic system to evaluate the change in the clinical status of the patients. Four studies (Dozeman et al., 2011; Joling et al., 2011; Moss et al., 2012; Van der Aa et al., 2015) provided information about the effect of the interventions only for the short-term (<6 months), one study (Boen et al., 2012) provided information only for the long-term (>6 months), and three studies (Almeida et al., 2020; Gilbody et al., 2021; Spek et al., 2007) provided information for both short and long-term outcomes.

3.2.5. Risk of bias assessment

There was no evidence of selection bias since all the studies reported adequate random sequence generation (sufficient information was provided to evaluate how groups were randomized). Similarly, most of the studies (six studies) reported a low risk for allocation concealment. All studies were rates as having a high risk of bias for 'blinding of participants and personnel'; this is, though, typically unavoidable in studies of psychological interventions. None of the studies reported a high risk of bias for 'blinding of outcome assessment', though this was rated as unclear in two studies. The risk of attrition bias was low: only two studies did not address incomplete data. Three studies were rated as having a high risk of selective reporting bias. None of the studies reported a high risk of bias for other biases.

3.3. Meta-analyses

3.3.1. Principal analyses

Two meta-analyses were performed to test the effect of self-help psychological interventions compared to control groups at short and long-term (see Figs. 2 and 3). The results showed a significant effect favouring self-help interventions at short-term [$k = 7$, $d = 0.33$, 95% Confidence Interval (95% CI): 0.20 to 0.47] with moderate heterogeneity ($I^2 = 44.3$) and at long-term ($k = 4$, $d = 0.22$, 95% CI: 0.04 to 0.40) with high heterogeneity ($I^2 = 59.65$).

3.3.2. Subgroup analyses

Subgroup analyses were planned to calculate effect sizes for: (1) pure versus minimal contact; and (2) whether baseline subclinical status was established through a diagnostic interview versus a cut-off point on a severity measure (see Tables 2 and 3).

3.3.2.1. *Type of self-help*. The results did not indicate significant differences ($Q = 0.32$, $df = 1$, $p = .573$) between the effect obtained from pure self-help interventions ($k = 2$, $d = 0.42$, 95% CI: 0.09 to 0.48) and self-help with minimal contact ($k = 5$, $d = 0.30$, 95% CI: 0.16 to 0.45) at short-term. Similarly, the results did not either show significant differences ($Q = 0.46$, $df = 1$, $p = .497$) between the effect obtained from pure self-help interventions ($k = 2$, $d = 0.32$, 95% CI: −0.16 to 0.80) and self-help with minimal contact ($k = 2$, $d = 0.15$, 95% CI: 0.03 to 0.28) at
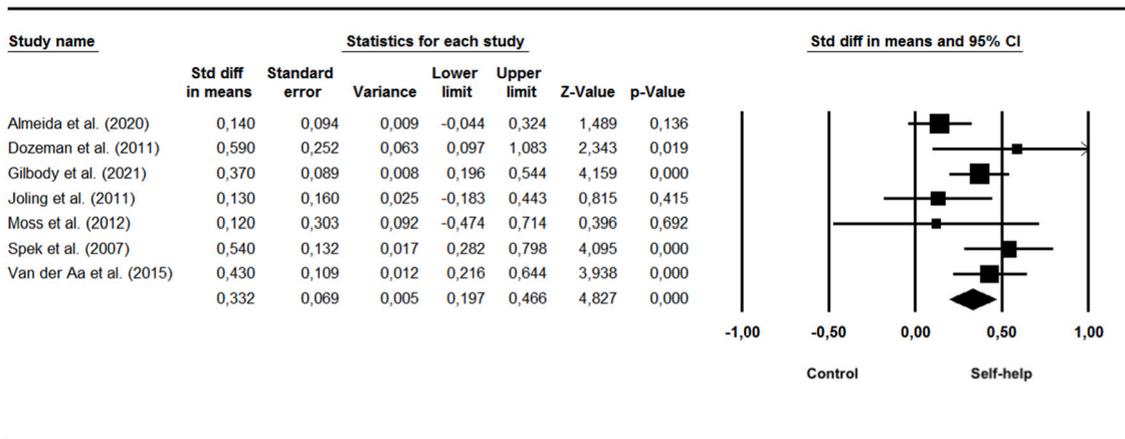
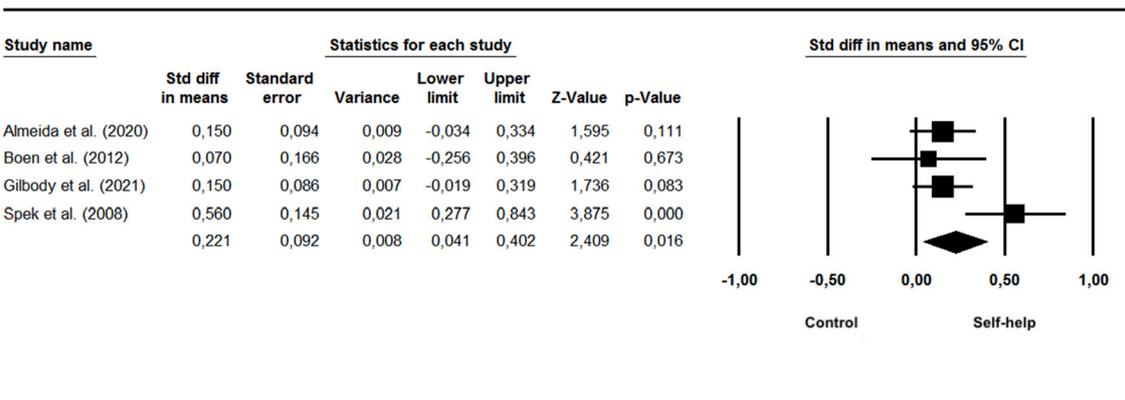**Fig. 2.** Forest plot and data of studies reporting an effect at short-term.

Fig. 3. Forest plot and data of studies reporting an effect at long-term.

Table 2
Meta-analyses performed according to the type of self-help.

Trials included			Effect				Heterogeneity		
Type of self-help	Effect along time	k	d	95% CI	p	Q-value	p	I^2
Pure	Short-term	2	0.42	0.05–0.79	0.028	1.62	0.204	38.16
Pure	Long-term	2	0.32	−0.16–0.80	0.189	4.95	0.026	79.81
Minimal	Short-term	5	0.30	0.16–0.45	0.000	7.39	0.116	45.90
Minimal	Long-term	2	0.15	0.03–0.28	0.018	0.00	0.999	0.00

Table 3
Meta-analyses performed according to the type of clinical assessment.

Trials included			Effect				Heterogeneity		
Type of self-help	Effect along time	k	d	95% CI	p	Q-value	p	I^2
DSM	Short-term	6	0.34	0.20–0.49	0.000	10.30	0.067	51.45
DSM	Long-term	3	0.26	0.04–0.48	0.020	6.74	0.034	70.33
Scales	Short-term	1	–	–	–	–	–	–
Scales	Long-term	1	–	–	–	–	–	–

long-term.

3.3.2.2. Type of clinical assessment. Two studies used self-reported measures, but one looked at effects at long-term and the other at short-term. Therefore, since we only had one study for each category, we did not perform a subgroup meta-analysis to determine the differences between the types of clinical assessment.

4. Discussion

The results suggest that pure or minimal contact self-help has a small but significant effect in reducing depressive symptoms compared to control groups for older adults with subclinical depressive symptoms in the short and the long-term. This provides provisional evidence that this type of psychological intervention may be useful in mitigating depressive symptoms in this specific population. This is in line with the meta-

analysis of Cuijpers et al. (2011), which also concluded that self-guided self-help achieves a small but significant effect relative to control groups for the reduction of depressive symptoms for adult patients. These potentially promising results, however, need to be considered in the light of the limitations of the both the systematic review and the primary studies.

4.1. Limitations

It is possible that both "subclinical depression" and "older adults" terms are poorly indexed in the databases. The search, therefore, may have missed relevant trials. Although this may have involved a loss of information, we are not able to determine its likely impact on the observed size of effect. A limited number of studies met inclusion criteria, which meant we were unable to assess publication bias. If publication bias is present, it is typically associated with an inflated effect size. It remains possible, therefore, that the effect observed in the analysis is larger than the true effect. Heterogeneity was moderate and, in some cases, high, which may limit the interpretability of the pooled effect sizes. The comparison analyses revealed no differences in the effect between pure and minimal contact self-help. However, with so few studies it is likely that the review is underpowered to detect differences. It is also possible that other sources of heterogeneity, such as the different diagnostic tools and the different types of control groups, may influence the observed effect. All of the included studies came for developed countries and, therefore, the results might not be generalisable to developing countries. Finally, self-help interventions can differ from each other and contain different steps and different ways to help with depression. However, the small number of studies meant that we were unable to explore through a meta-regression the impact of clinical or intervention characteristics on observed effect sizes.

The risk of bias assessment indicated a high risk of bias in all primary studies for 'blinding of participants and personnel'. Although this is typically impossible to achieve in trials of psychological interventions, the absence of blinding may serve to artificially inflate the observed effect. Three trials were also rated as potentially at risk of selective reporting, which may also be associated with an inflated effect. None of the studies used a diagnostic system to evaluate the change in the clinical status of the patients at post-treatment. It is unclear, therefore, what impact these interventions have on the prevention of major depression in older adults with subclinical depression.

4.2. Implications

While there is evidence of an effect of self-help interventions for older adults with subclinical depression, some caution is required. The effect, though significant, is small and, as set out in the limitations, we cannot rule out the possibility that the observed size of the effect is overstated. There is a need for future studies to establish the extent to which the reduction in symptoms observed translates into a reduction in the proportion of older adults who subsequently develop major depression. Although we found no differences in effect size between pure and minimal support self-help, there is a need to further examine this in future studies or subsequent reviews given the small number of studies. In addition, there may be value were future studies to focus on the comparative effects of the different specific self-help intervention. An assumption of self-help interventions is that they will be highly cost effective because there is limited professional or paraprofessional involvement. However, no studies provided a health economic analysis to test this assumption, and this should also be incorporated into future evaluations. The self-help interventions studied in this review focused on psychological treatment techniques; however, we know that psychical activity and nutrition are also important factors connected with depression prevention and treatments in older adults (Matison et al., 2021; Zhang et al., 2021). There may be value in examining the impact of the inclusion of these approaches alongside psychological

approaches.

Although there are a number of caveats, there is some initial evidence that pure and minimal self-help approaches may be of benefit to older adults with subclinical depressive symptoms. Subclinical depression is a key risk factor for major depression in older adults and is also associated with levels of functional impairment comparable to that seen in major depression. Simple, effective approaches such as self-help may be valuable, particularly given the shortage of provision for people with clinical levels of symptoms. The small effect observed may mean that this approach is best used as part of a stepped care model, in which progressively more intensive therapies are offered depending on response to less intensive approaches (Bower and Gilbody, 2005).

5. Conclusion

There is provisional evidence that pure and minimal support self-help interventions may have some effect in reducing depressive symptoms in older adults with subclinical depression. While caution is needed in making this conclusion, there is value in further exploring the potential of these approaches as part of stepped care or other comparable health care approaches.

CRediT authorship contribution statement

JC, SG and DMcM contributed to the development of the protocol, methodological decisions and the writing of the paper. JC conducted the searches and analyses. All authors have approved the final version of the paper.

Declaration of competing interest

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