

Review article

The effects of delivery format on the effectiveness and acceptability of self-guided interventions for depression in older adults: A systematic review and meta-analysis

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ABSTRACT

Self-guided interventions could improve the availability of evidence-based psychotherapies for late-life depressive symptoms. However, their treatment outcomes and acceptability across delivery formats remain uncertain. This review aimed to examine the effectiveness and acceptability of self-guided intervention for older adults with depressive symptoms and the impact of different intervention features. Randomised controlled trials included older adults (mean age ≥ 60 years) with elevated depressive symptoms who received self-guided interventions for depression were eligible. Trials were extracted from an existing database and updated systematic literature searches in PubMed, PsychINFO, Embase, and Cochrane Library (last update: 20th Mar 2025). Data were synthesised with random-effects meta-analysis, subgroup analysis, and meta-regressions. Outcomes included depressive symptoms, quality of life, and dropout rates. Seven studies with 1170 participants were identified. Compared to controls, self-guided interventions had small-to-moderate effect in reducing depressive symptoms at post-treatment ($g = 0.46$, 95 % CI 0.20 to 0.73), but the effect was not sustained at 3-to-12-month follow-up ($g = 0.15$, 95 % CI -0.45 to 0.74). Effects on quality of life remains inconclusive. Acceptability was comparable between self-guided interventions and control conditions ($RR = 1.52$, $p = .294$). No differences in treatment effects and acceptability were observed across delivery formats, support levels, or initial human screening. Most studies showed a moderate-to-high risk of bias ($n = 6$). Self-guided interventions for depression were associated with reductions in depressive symptoms and were acceptable to older adults, regardless of delivery format and level of human support. They may be considered a brief intervention option in resource-limited setting.

1. Introduction

Depression is one of the commonly under-diagnosed and under-treated psychological conditions among older adults (Devita et al., 2022). In 2021, approximately 93.1 million older adults experienced depression, leading to poorer physical and psychological health and 14.8 million disability-adjusted life-years (DALYs) (Wang et al., 2025). A recent meta-analysis found that the direct excess costs of late-life depression ranged from \$358 to 14,225 across the globe, representing

a 73 % increase compared to those without depression (König et al., 2019). Accessible and scalable interventions are needed to meet the demand of effectively intervening in older adults with depression or preventing the worsening of nonclinical depressive symptoms. Even though psychological interventions can effectively alleviate depressive symptoms in older adults, the shortage of trained mental health practitioners, substantial treatment costs, limited mobility and transportation concerns are identified as impediments to the intervention accessibility (Elshaikh et al., 2023; Reynolds 3rd et al., 2022).

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Furthermore, older adults' fear of stigmatization might hinder their intentions to seek professional help (Elshaikh et al., 2023). Self-guided interventions could serve as a potential approach to addressing these barriers and improving the availability of evidence-based psychotherapies for late-life depression.

Self-guided interventions are described as psychological interventions with no or minimal interventionist clinical guidance, aimed at provisioning simple and affordable mediums to uplift the accessibility to evidence-based psychotherapies (Cuijpers et al., 2011; Karyotaki et al., 2017). Various formats of self-help treatments are available as technologies evolve, including self-guided workbooks, audiotapes, websites, and mobile apps (Furukawa et al., 2021). Different approaches are possible for delivering self-help interventions, such as pure self-administration, minimal technical support, therapeutic support upon request, and automated or real-person prompts to motivate individuals (Tong et al., 2024). Two meta-analyses have demonstrated the effectiveness of self-guided psychological treatments for older adults with depressive symptoms at a clinically significant level (Tong et al., 2024) and subclinical level (Corpas et al., 2022). Significant small-to-moderate treatment effects on reducing their depressive symptoms and improving quality of life have been identified. However, substantial variability in intervention modality was observed in Corpas et al. (2022), ranging from standalone behavioral activation (BA) bibliotherapy, guided self-help in a stepped care model, to self-help group in a multicomponent intervention. As these interventions were all compared with usual care or no treatment, the specific effects of the self-guided interventions in older adults remain ambiguous.

A research gap exists regarding the influence of intervention delivery formats on treatment outcomes in older adults. While Tong et al. (2024) has indicated that self-guided interventions delivered through computer programs and mobile apps had greater effect sizes than written formats among adults, only 8 % of the studies included in the review involved older adults. The disparity in representation may hinder the direct applicability of the results to older adults, especially considering the prevalent digital divide experienced by this population, including limited access to technology and low levels of digital literacy. Older adults have reported anxiety in using technology (Yin et al., 2024) and a preference towards having traditional written or printed materials as a supplement in digital interventions (Leung et al., 2023). The digital divide may impact their acceptance and adherence to the web- or mobile-delivered self-guided psychological interventions (Alkureishi et al., 2021), which in turn influence treatment outcomes (Hanano et al., 2022). Evidence suggests that web-based interventions suffered a higher dropout rate (Beiwinkel et al., 2017; Karyotaki et al., 2021; Nobis et al., 2015; Zhang et al., 2024), although review articles overlooked the acceptability of self-guided interventions of different types for older adults. There might be a dual process regarding the perceived usefulness in technology-assisted interventions—one related to the intervention itself and the other concerning the technology utilised. In other words, participants may recognise the benefits of self-guided interventions, but challenges with technology can inhibit their full engagement, ultimately restricting the capacity to reap the intended benefits. Therefore, this study aimed to (1) examine the effectiveness and acceptability of self-guided intervention in treating depressive symptoms in older adults and (2) examine the potential impact of delivery formats on treatment effects and acceptability.

2. Methods

This systematic review and meta-analysis are reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Moher et al., 2009). The current review was not preregistered, and no protocol is available. The PRISMA checklist is available in the Supplementary Information.

2.1. Search strategy and selection criteria

We included randomised controlled trials (RCTs) from an existing database on self-guided interventions for depression (<https://zenodo.org/records/12721446>). This meta-analytic database is developed through systematic literature searches in PubMed, PsycINFO, Embase, and Cochrane Library (last update: 1 January 2024). We conducted an updated search following the same protocol on 20 Mar 2025. Two researchers screened all titles and abstracts, as well as full texts, independently. Any disagreements were resolved through discussion between the two researchers.

RCTs were included if they compared self-guided interventions focusing on depressive symptoms with a control condition (i.e., waitlist, usual care, or other inactive controls such as attention control). Support provided in the self-guided intervention was restricted to monitoring progress or enhancing participant adherence (e.g., technical support, automated or human encouragement) without therapeutic input (e.g., guidance on cognitive restructuring). Examples included calls or emails prompting participants to use intervention materials, such as websites and booklets. Major types of psychotherapies (e.g., CBT, problem-solving therapy, or third-wave therapy) delivered in any format (e.g., mobile-based, web-based, bibliotherapy) were eligible. However, single-session interventions were excluded due to their potential to increase clinical heterogeneity (e.g., intensity and duration of treatment) (Chess and Gagnier, 2016; Tong et al., 2024). We focused on studies including older adult participants (mean age ≥ 60 years) with elevated depressive symptoms identified through clinical diagnostic interviews or validated self-reported scales (i.e. score above the cut-off). Participants did not necessarily have depression as their primary diagnosis and could have any physical and mental health comorbidities. There were no restrictions on language. The PRISMA flowchart is shown in Fig. 1 and the full search strategy can be found in Supplementary Information.

2.2. Data extraction

Information was extracted related to characteristics of participants (mean age, percentage of women, diagnostic method, and recruitment method), interventions (e.g. type of intervention, number of sessions, delivery formats, support levels, human contact, and commercial availability), and studies (e.g. publication year, country of study, and type of comparison). Two independent researchers extracted data and resolved disagreements through discussion.

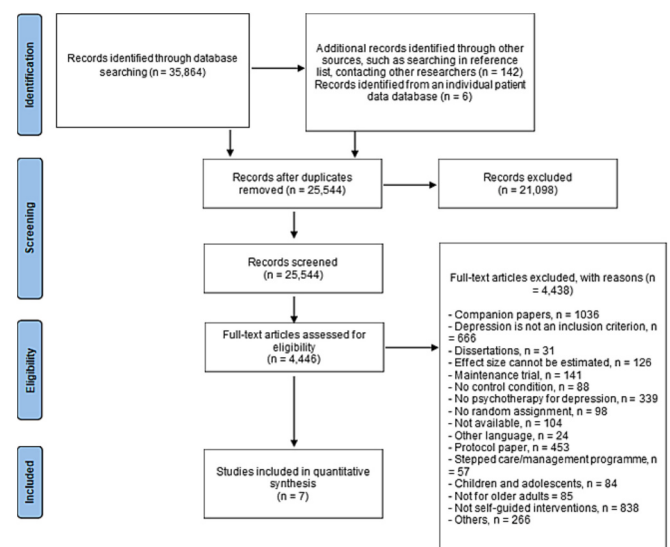


Fig. 1. PRISMA flowchart.

2.3. Risk of bias assessment

The modified version of the Cochrane Risk of Bias (RoB) assessment tool, version 2 was used to assess the validity of the included studies. It assesses five sources of bias, including (1) the randomisation process, (2) the deviations from the intended interventions, (3) the missing outcomes data, (4) the measurement of the outcome, and (5) the selection of reported results. Studies were categorised as having low risk, some concerns, or high risk. Two independent researchers conducted the assessment and data extraction, and discrepancies were resolved through discussion. Details of the risk of bias assessment can be found in Supplementary Information Fig. 1. Two independent researchers performed the evaluation, and any disagreements were resolved through discussion.

2.4. Analytic procedure

The outcomes were the severity of depressive symptoms and quality of life (QoL) calculated by standardised mean differences (SMD) with 95 % CI between intervention and control groups at post-intervention assessment. The long-term effect sizes after three months post-randomisation were also calculated where possible. Hedges' g was used as effect size to account for small sample sizes in included studies. An SMD of 0.2 was considered a small effect, 0.5 a moderate effect and 0.8 a large effect (Cohen, 1988). Treatment acceptability was assessed by attrition rates at post-assessment using relative risk (RR) with 95 % CI. Dropouts were defined as participants who did not complete the post-assessment of the depression scale for any reason.

Pooled effect sizes were calculated by aggregating all effect sizes within one study and pooling the overall effects based on the arm level. Several sensitivity analyses were performed to pool the effect sizes by (1) only using the smallest or largest effect in each study, (2) excluding studies with a high risk of bias, (3) excluding outliers (studies whose 95 % CIs of effect sizes did not overlap with the 95 % CI of the pooled effect size), (4) excluding influential studies defined by the diagnostics (Viechtbauer and Cheung, 2010) and (5) using a three-level correlated and hierarchical effects (CHE) model with assumed intra-study correlation of $p = .6$. The number-needed-to-be-treated (NNT) was calculated using Furukawa's formula, with the control group's event rate conservatively set at 17 % (Cuijpers et al., 2021). Heterogeneity across included studies was calculated using I^2 statistics with 95 % CI. An I^2 of 25 % was considered low heterogeneity, 50 % moderate heterogeneity, and 85 % high heterogeneity. A random-effects model was used for all analyses.

Subgroup analyses were performed to examine the intervention effects based on the characteristics of participants, interventions, and studies using a mixed-effects model. Subgroup analyses required at least three studies per subgroup. Meta-regression was performed to examine whether heterogeneity was associated with year of publication, mean age, percentage of women, and number of intervention sessions. Publication bias was assessed using funnel plot and Egger's tests and adjusted using trim and fill procedure (Duval and Tweedie, 2000), limit meta-analysis method (Rücker et al., 2011), and the three-parameter selection model (McShane et al., 2016). The analyses were conducted in RStudio using the *metapsy Tools* package.

3. Results

3.1. Study selection and characteristics

The initial database search yielded 35,518 records, and 142 additional records were identified through other sources such as searching in the reference list. After removal of duplicates, 25,315 records were screened, and 4445 full-text articles were assessed for eligibility. Seven articles met the inclusion criteria. A total of nine comparisons between a self-guided intervention and a control condition were conducted in the

included studies. The PRISMA flowchart of the selection process is presented in Fig. 1.

The studies included a total of 1170 participants, with 580 participants receiving self-guided intervention for depression and 590 participants receiving control (Table 1). The sample size of included studies ranged from 24 participants to 487 participants. A total of 74.8 % participants were females. Three studies identified elevated depressive symptoms in participants using a cut-off score in validated self-reported scales, including Patient Health Questionnaire-9, Hamilton Rating Scale for Depression, and Geriatric Depression Scale. In the other four studies, participants were assessed with clinical interviews, with two studies focusing on subthreshold depression, one on major depressive disorder, and one on mood disorder. All studies were conducted in high-income countries ($n = 7$). Participants were mainly recruited from community settings ($n = 5$), clinical setting ($n = 1$), and other settings such as the participant pool of a previous study ($n = 1$). Nine interventions were included in the 7 studies, where two of the studies consist of more than one intervention arm. Intervention modalities included CBT ($k = 8$) and behavioral activation ($k = 1$). The format of interventions included written-based ($k = 4$); web-based ($k = 3$), audio-based ($k = 1$), and computerised ($k = 1$). Six interventions provided human support, two were purely self-guided, and one had technical support. Human support included regular calls, up to once weekly, to monitor participants' mood and encourage them to engage with the intervention. Six interventions had initial human screening. Three interventions were commercial interventions by the time the study was conducted. The control conditions were waitlist ($k = 6$), care as usual ($k = 2$), and attention control ($k = 1$). One study (14 %) was rated as low risk of bias, four studies (57 %) had some concerns, and two studies (29 %) were at a high risk of bias.

3.2. Overall effectiveness of self-guided interventions

Self-guided interventions were associated with a small to moderate effect ($g = 0.46$, 95 % CI 0.20 to 0.73) in reducing depressive symptoms in older adults (Table 2). The NNT was 6.5, indicating that we need to treat approximately seven patients to improve one additional patient in practice compared to the control conditions. The heterogeneity of the included studies was moderate ($I^2 = 59.3$, 95 % CI 15.3 to 80.5). There were no outlier studies. When the influential study (i.e. O'Moore, 2018) was removed, the effect size ($g = 0.36$, 95 % CI 0.12 to 0.59) and heterogeneity ($I^2 = 42.59$, 95 % CI 0.00 to 74.62) decreased. Egger's test of the intercept indicated funnel plot asymmetry ($p = .028$), indicating evidence of publication bias. When correcting for publication bias, the selection model showed comparable effect sizes ($g = 0.45$, 95 % CI 0.20 to 0.69, NNT = 6.83) with the main model. However, trim and fill method (five studies added, $g = 0.20$, 95 % CI -0.11 to 0.52, NNT = 16.13) and limit meta-analysis ($g = 0.14$, 95 % CI -0.24 to 0.53, NNT = 23.4) showed decreased and non-significant effect sizes compared to the main model. Four studies (five comparisons) reported long-term effects at three to 12 months after randomisation. The effect of self-guided interventions at follow-up was insignificant ($g = 0.15$, 95 % CI -0.45 to 0.74).

Only two studies examined QoL and hence no meta-analysis was performed. One study found no significant improvements in QoL at post-assessment and 12 months after randomisation (Gilbody et al., 2022). Another study found that the mental health component of QoL significantly improved at post-assessment and six months after randomisation (O'moore et al., 2018).

3.3. Subgroup and meta-regression analyses

Subgroup analyses revealed no statistically significant subgroup differences in study characteristics, including trials' risk of bias, control conditions, and recruitment settings for reducing depressive symptoms (Table 3). No significant difference was found between individuals with clinician diagnoses (i.e., depressive disorders or subclinical depression)

Table 1
Study characteristics.

Study	Country	Intervention	Control	Number exp. (N)	Number comp (N)	% Female	Recruitment	Diagnosis	Program name	Format	Session (N)	Duration	Support	Commercial availability	Initial human screening
Floyd et al., 2004	USA	CBT	Waitlist	13	14	0.76	Community	Mood disorder	Feeling good	Bibliotherapy	20	1 month	Human	Yes	Yes
Gilbody et al., 2022	UK	BA	Care as usual	137	141	0.55	Clinic	Subclinical depression	SHARD self-help booklet	Bibliotherapy	Not recorded	4–6 weeks	Human	No	Yes
Glozier et al., 2013	Australia	CBT	Attention control	214	273	0.61	Others	Cut-off	eCouch	Internet	12	12 weeks	Technical	No	No
O'moore et al., 2018	Australia	CBT	Care as usual	44	25	0.80	Others	Major depressive disorder	Sadness Program	Internet	6	10 weeks	None	No	Yes
Scogin et al., 1989	USA	CBT	Waitlist	21	21	0.85	Community	Cut-off	Feeling good	Bibliotherapy	20	4 weeks	Human	Yes	Yes
Scogin et al., 1989	USA	CBT	Waitlist	20	21	0.85	Community	Cut-off	Control your depression	Bibliotherapy	7	4 weeks	Human	Yes	Yes
Shah et al., 2018	USA	CBT	Waitlist	15	16	0.84	Others	Cut-off	Audio-based cognitive behavioral therapy (ACBT)	Audio	Not recorded	4 weeks	Human	No	No
Shah et al., 2018	USA	CBT	Waitlist	14	16	0.84	Others	Cut-off	Computer-based cognitive behavioral therapy (CCBT)	Computer	11	4 weeks	Human	No	No
Spek et al., 2007	Europe	CBT	Waitlist	102	100	0.63	Community	Subclinical depression	Coping With Depression (CWD)	Internet	8	8 weeks	None	No	Yes

Table 2

Overall effects of self-guided interventions for adult depression compared with control conditions.

	<i>k</i>	<i>g</i>	CI	<i>p</i>	<i>I</i> ²	CI	PI	NNT
Post-intervention								
Overall	9	0.46	[0.2; 0.73]	0.004	59.37	[15.27; 80.51]	[−0.21; 1.14]	6.54
One ES/study (lowest)	7	0.3	[−0.02; 0.63]	0.064	54.69	[0; 80.6]	[−0.35; 0.96]	10.47
One ES/study (highest)	7	0.68	[0.22; 1.13]	0.011	78.47	[55.51; 89.58]	[−0.49; 1.84]	4.28
Influence Analysis	8	0.36	[0.12; 0.59]	0.01	42.59	[0; 74.62]	[−0.1; 0.81]	8.82
Only rob >2 ^f	6	0.4	[0.04; 0.77]	0.036	61.76	[6.76; 84.32]	[−0.36; 1.17]	7.64
Three-Level Model	16	0.51	[0.25; 0.77]	0.004	70.4	–	[−0.21; 1.23]	5.86
Three-Level Model (CHE)	16	0.5	[0.22; 0.78]	0.006	77.4	–	[−0.35; 1.35]	6.03
Publication bias correction								
Trim-and-fill method (5 studies added)	14	0.2	[−0.11; 0.52]	0.187	71.44	[50.95; 83.37]	[−0.83; 1.24]	16.13
Limit meta-analysis	9	0.14	[−0.24; 0.53]	0.461	79.9	–	[−0.62; 0.91]	23.4
Selection model	9	0.45	[0.2; 0.69]	<0.001	64.22	[0; 92.32]	[−0.09; 0.98]	6.83
Follow-up tests (6 to 12 months post-randomisation)								
Overall	5	0.15	[−0.45; 0.74]	0.537	69.83	[22.91; 88.19]	[−1.12; 1.41]	23.21
One ES/study (lowest)	4	0.16	[−0.71; 1.02]	0.603	75.5	[32.31; 91.13]	[−1.58; 1.9]	21.27
One ES/study (highest)	4	0.37	[−0.33; 1.06]	0.19	73.27	[24.85; 90.49]	[−1.08; 1.82]	8.47
Influence Analysis	4	−0.05	[−0.28; 0.18]	0.561	0	[0; 84.69]	[−0.35; 0.26]	74.15
Only rob >2	2	0.4	[−5.52; 6.33]	0.545	90.74	[66.73; 97.42]	[−9.55; 10.36]	7.64
Three-Level Model	9	0.2	[−0.57; 0.97]	0.467	76.3	–	[−0.93; 1.33]	16.53
Three-Level Model (CHE)	9	0.22	[−0.6; 1.05]	0.443	76.1	–	[−0.92; 1.37]	14.62

Note: *k*, numbers of comparisons; ES, effect size; CI, confidence interval; PI, prediction interval; NNT, numbers-needed-to-be-treated.**Table 3**

Subgroup analyses of self-guided intervention for adult depression compared with control conditions at post-assessments.

		<i>N</i>	<i>g</i>	95 % CI	<i>I</i> ²	95 % CI	NNT	<i>p</i>
Risk of bias	High risk	3	0.64	[−0.25; 1.53]	28.1	[0; 92.5]	4.56	0.340
	Some concerns/low risk	6	0.40	[0.04; 0.76]	61.8	[6.8; 84.3]	7.74	
Control group	Waitlist	6	0.55	[0.22; 0.88]	31.1	[0; 72]	5.44	0.522
	CAU/others	3	0.37	[−0.69; 1.43]	78.4	[30.4; 93.3]	8.46	
Recruitment	Community	4	0.50	[−0.04; 1.04]	44.8	[0; 81.6]	5.99	0.856
	Clinical/others	5	0.46	[−0.03; 0.94]	69.4	[21.6; 88.1]	6.65	
Diagnosis	Clinical interview ^a	4	0.47	[−0.14; 1.08]	68.8	[9.8; 89.2]	6.40	0.978
	Cut-off	5	0.48	[0.03; 0.93]	59.8	[0; 85]	6.30	
Delivery format	Bibliotherapy	4	0.48	[−0.1; 1.06]	57.4	[0; 85.8]	6.31	0.824
	Web-based	3	0.41	[−0.65; 1.48]	78.0	[29.1; 93.2]	7.5	
Support level	Human support	6	0.53	[0.18; 0.88]	48.5	[0; 79.6]	5.67	0.654
	Technical support/ no support	3	0.40	[−0.65; 1.45]	78.0	[29.1; 93.2]	7.7	
Initial human screening	Yes	6	0.50	[0.12; 0.89]	63.6	[12; 85]	5.95	0.717
	No	3	0.41	[−0.5; 1.32]	56.9	[0; 87.7]	7.51	
Commercial availability	Yes	3	0.64	[−0.25; 1.53]	28.1	[0; 92.5]	4.56	0.340
	No	6	0.40	[0.04; 0.76]	61.8	[6.8; 84.3]	7.74	

Note: *N*, numbers of comparisons; CI, confidence interval; NNT, numbers-needed-to-be-treated; CAU, care as usual.^a Clinical interview = clinician-rated subclinical depression, major depression disorders, mood disorders.

and those who used a cut-off score. There were also no statistically significant subgroup differences in intervention characteristics, including delivery formats, support level, initial human screening, and commercial availability. We excluded country, type of psychotherapy, and categories of ‘computer-based’ and ‘audio-based’ in delivery formats from subgroup analyses due to an insufficient number of studies per subgroup.

Meta-regression analyses revealed no significant findings in year of publication, mean age, percentage of women, and number of intervention sessions.

3.4. Treatment acceptability

The average dropout rates were 20 % for self-guided interventions and 15 % for control conditions. Self-guided interventions and control conditions had comparable acceptability (RR = 1.52, 95 % CI: 0.64 to 3.61, *p* = .294). There were no statistically significant subgroup differences in delivery format, support levels, or initial human screening (Table 4). Nonetheless, the web-based self-guided intervention subgroup showed a trend of higher average dropout rates than the bibliotherapy subgroup (web-based = 27 %, bibliotherapy = 16 %), showing a

Table 4

Treatment acceptability of self-guided interventions at post-assessments.

		<i>N</i>	RR	CI	<i>I</i> ²	CI	<i>p</i>
Overall		9	1.52	[0.64; 3.61]	84.66	[72.62; 91.41]	0.294
Delivery format	Bibliotherapy	4	2.6	[0.85; 8]	0	[0; 84.7]	0.701
	Web-based	3	1.85	[0.05; 62.87]	95.1	[88.9; 97.8]	
Support level	Human support	6	1.33	[0.44; 4]	56	[0; 82.3]	0.722
	Technical support/ no support	3	1.85	[0.05; 62.84]	95.1	[88.9; 97.8]	
Human initial screening	Yes	6	1.57	[0.67; 3.68]	61.2	[5.2; 84.1]	0.948
	No	3	1.46	[0.02; 117.12]	93.1	[83.1; 97.2]	

Note: *N*, numbers of comparisons; RR, risk ratio; CI, confidence interval.

potentially lower acceptability.

4. Discussion

This meta-analysis examined the effectiveness and acceptability of self-guided interventions for older people with depressive symptoms, considering various characteristics of the trials, interventions, and participants. The interventions examined were predominantly based on CBT, delivered in either written format or through websites, with human encouragement. Our findings indicated that self-guided interventions significantly reduced depressive symptoms in older people with a moderate effect size post-intervention, but the effect was not sustained after three to 12 months. Self-guided interventions were also as acceptable to older people compared to CAU or other control groups. Self-guided interventions with different delivery formats, being web-based or bibliotherapy, showed similar effectiveness. However, there was a noticeable trend, albeit statistically insignificant, that web-based interventions were less accepted than bibliotherapy.

The effect size observed in this study was higher than that of a similar meta-analysis on self-guided treatments for depression ($d = 0.33$) (Corpas et al., 2022), which might be attributed to the different inclusion criteria in terms of baseline depression level. While both reviews included older adults with subclinical depression, the baseline depression level in our study was likely higher because we included individuals above the cut-off in validated scales or with diagnosed depressive disorders, whereas the previous review included individuals with subclinical depression who scored below the cut-off. Nonetheless, these two reviews together indicate that self-guided CBT-based interventions effectively reduce depressive symptoms, especially among individuals with elevated depressive symptoms.

The long-term effects of self-guided interventions appear limited in older adults with clinically significant depression compared to those with subclinical depression (Corpas et al., 2022) and the broader adult population (Tong et al., 2024). A qualitative study with older adults with moderate depression identified several factors influencing their day-to-day self-management of depression, including negative perceptions of age and depression, barriers to healthcare access, and low self-efficacy for self-management (Polacsek et al., 2020). While self-guided interventions improve access to effective interventions and mental health literacy, older adults with low self-efficacy experience difficulty translating learned knowledge and skills into effective self-management strategies in daily life. Management of depression may be further complicated by physical comorbidities and cognitive dysfunction common in older adults (Berk et al., 2023). Therefore, ongoing support may be necessary to address these challenges and facilitate active management of depression. Previous studies have suggested that booster sessions and follow-up relapse prevention sessions can help maintain the treatment effect at six months or longer post-randomisation (Karyotaki et al., 2016). Future research could explore strategies to promote ongoing self-management and sustained long-term benefits among older adults.

Our results suggested comparable treatment outcomes between web-based interventions and written-format interventions. Treatment outcomes remained similar when participants were provided with enhanced support, such as weekly encouragement, in line with previous research (Tong et al., 2024). These suggest a potential to scale up self-guided interventions amid the shortage of mental health practitioners. With the growing smartphone ownership and usage in older adults (Kakulla, 2023), interventions can be more readily accessible to a larger population of potential service users. Previous studies found that web-based interventions shown to have significantly higher dropout rates than control conditions (Beiwinkel et al., 2017; Karyotaki et al., 2021; Nobis et al., 2015; Zhang et al., 2024). Our findings suggest that web-based means were not statistically inferior to written format and control conditions when it comes to service provision for older adults, albeit still showing a trend of lower acceptability. The higher average dropout

rates in web-based interventions suggested potential challenges for older adults to follow through in the digital environment. The different affordances in internet interventions could mean that older adults may need to adapt new digital use habits, which could present hurdles for continuous engagement. It warranted future research to identify the risk factors associated with dropping out.

The findings suggest that internet interventions could be as effective as conventional intervention delivery methods, but it is crucial to address a potential digital divide within the older population which might prevent some older adults from receiving effective and efficient interventions. Future studies could explore the potential benefits of mobile-based interventions in the population. Older adults are more likely to access mental health and wellness-related digital services through mobile apps than websites because websites were too complicated to access, and their digital functions were less intuitive and clear (Kakulla, 2023). The latter could pose a challenge particularly to older adults with lower digital literacy levels. Advancements in mobile technology have created opportunities to employ easy-to-use interventions that blend seamlessly into the daily lives of older adults. For example, leveraging mobile accessibility, interventions can be implemented in an ecologically momentary manner, which allows responsive and adaptive content in the intervention and enhances the applicability of learned skills and behaviours in daily life (Schueller et al., 2017). A recent review suggested that mobile-based interventions might have a smaller effect size than computer-based interventions in addressing depression in adults (Tong et al., 2024). It is important to note that they are still at their early stage of development and more research is needed to enhance their effectiveness.

Two studies evaluated the treatment effect on QoL and reported mixed findings (Gilbody et al., 2022; O'moore et al., 2018). Nonetheless, the small number of studies measuring QoL might indicate a focus on symptom reduction in self-guided interventions for depression, overlooking the individuals' holistic well-being or life satisfaction. There have been calls for changing the way we view mental health challenges, moving away from a traditional narrative on pathology towards emphasizing personal strengths, positive experiences, and resilience (Peteet, 2018). Future self-guided interventions could consider incorporating value- and virtue-oriented approaches, such as compassion-based, positive psychology, and dignity-and-gratitude-promoting interventions, to improve well-being in people experiencing depression (Peteet, 2018).

4.1. Strengths and limitations

We included only randomised controlled trials and used validated scales to assess depressive symptoms. Several sensitivity analyses were conducted to evaluate intervention effectiveness and acceptability, while subgroup analyses and meta-regressions provided insights into factors influencing intervention outcomes.

This study has several limitations. First, the number of included studies was limited and there was a lack of long-term assessment of treatment outcomes, which hinders the exploration of potential mediators and long-term treatment effects. Second, only one study included in the analysis has a low risk of bias across all criteria, potentially leading to an overestimation of the effect size. Nonetheless, sensitivity analyses revealed no significant impact from the higher-risk studies. Third, there is a considerable publication bias, with effect sizes changed from 0.46 to 0.14 in the limit meta-analysis. Fourth, all studies included were from high-income countries. This raises concerns about generalizability and underscores the need for more research in low- and middle-income countries where mental health resources may be scarce (Kakulla et al., 2011). Fifth, while we excluded single-session interventions for depression to address potential clinical heterogeneity, there is emerging evidence that they are non-inferior to standard-length treatment in adults with self-reported depression or anxiety (Bisby et al., 2024). Future studies could examine whether single-session interventions for

depression are effective for older adults. Last, individual-level factors that might influence treatment effects, such as depressive symptom severity, acceptance, and adherence to intervention, were not examined. Investigating these factors could provide valuable insights into which types of self-guided interventions are most effective for older adults with varying profiles.

5. Conclusion

Self-guided interventions for depression demonstrated a small-to-moderate effect in reducing depressive symptoms compared to control conditions, regardless of delivery format. These interventions are widely acceptable among older people with elevated depressive symptoms. Evidence suggests that self-guided interventions have the potential to scale up using digital technologies to deliver effective internet-based interventions with minimal human support. Attention should be paid to the digital divide among older adults for improving intervention acceptability. Further research is warranted to investigate strategies for maintaining treatment effects in the long term.

CRediT authorship contribution statement

Dara Kiu Yi Leung: Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Dipsy Ho Sum Wong:** Writing – original draft, Visualization, Formal analysis. **Frankie Ho Chun Wong:** Writing – review & editing. **Stephanie Ming Yin Wong:** Writing – review & editing. **Oscar Long Hung Chan:** Writing – original draft. **Gloria Hoi Yan Wong:** Writing – review & editing, Funding acquisition. **Wai Chi Chan:** Writing – review & editing, Funding acquisition. **Terry Yat Sang Lum:** Writing – review & editing, Funding acquisition.

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Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Terry Yat Sing Lum reports financial support was provided by Hong Kong Jockey Club. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jad.2025.119756>.

Data availability

The data that support the findings of this review are available from <https://zenodo.org/records/12721446>.

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