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Traditional Buddhist Mindfulness versus Secular Mindfulness-based Cognitive Therapy for Residual Depressive Symptoms in Patients Treated for Depressive Disorder: A Pilot Randomized Controlled Trial

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Abstract

Objectives

To compare the efficacy, acceptability, and feasibility of traditional Buddhist mindfulness (TBM) versus secular mindfulness-based cognitive therapy (MBCT) for residual depressive symptoms, and to examine whether TBM is non-inferior to MBCT in improving depressive symptoms and psychological wellbeing.

Methods

In this pilot randomized controlled trial, Buddhist adults with residual depressive symptoms (Beck Depression Inventory–II [BDI-II] score > 13) receiving outpatient antidepressant treatment were randomized to an 8-week group-based TBM or MBCT intervention. Primary outcomes were depressive symptoms (BDI-II) and psychological wellbeing (WHO-5 Well-Being Index). Secondary outcomes included mindfulness, self-compassion, and perceived benefits from religiosity/spirituality. Primary analyses followed the intention-to-treat principle. Non-inferiority margins were prespecified at 2.5 BDI-II points and 1.25 WHO-5 points.

Results

Sixty-six participants were randomized (TBM = 34; MBCT = 32). Both interventions produced significant within-group improvements. Mean BDI-II scores decreased by 13.1 points in TBM ($p < .001$; Cohen's $d = 0.93$) and 12.9 points in MBCT ($p < .001$; $d = 1.15$). WHO-5 scores increased by 6.8 points in TBM ($p < .001$; $d = 0.93$) and 6.9 points in MBCT ($p < .001$; $d = 0.95$). Between-group differences were not statistically significant, and non-inferiority of TBM was not demonstrated (BDI-II: Mdiff = − 0.16, 95% CI − 5.4 to 5.1; WHO-5: Mdiff = − 0.2, 95% CI − 3.2 to 2.8). Mindfulness and self-compassion increased in both groups, while religiosity/spirituality increased only in TBM.

Conclusions

Both TBM and MBCT were associated with large, clinically meaningful improvements and comparable acceptability. TBM's selective effect on religiosity/spirituality highlights its cultural relevance and supports further evaluation in larger trials.

Pre-registration:

This study was registered in the Clinical Trial Registry ([Blinded for Review]) on 13/06/2024.

Introduction

Mindfulness originates from the Buddhist contemplative practice of *sati* (Anālayo, 2003; Grossman & Van Dam, 2011). From the late 20th century onwards, the therapeutic potential of mindfulness gained increasing recognition in Western clinical science. This led to the development of structured, secular mindfulness-based interventions (MBIs), such as Mindfulness-Based Stress Reduction(MBSR; Kabat-Zinn, 1982, 2003) and Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002; Teasdale et al., 2000). MBCT was originally designed to prevent relapse in recurrent depression, with substantial evidence accruing over the years supporting its efficacy (Kocovski & MacKenzie, 2016; McCartney et al., 2021). More recent findings indicate that MBCT also benefits individuals with acute depressive symptoms (Goldberg et al., 2019), and those with various other psychological and physical conditions (Chiesa & Serretti, 2011; Hempel et al., 2014; Khoury et al., 2013).

Although rooted in Buddhist philosophy, MBIs were intentionally secularized to ensure broad accessibility irrespective of religious affiliation. This secularization, however, has prompted debate regarding the extent to which contemporary MBIs diverge from foundational Buddhist principles, including ethics, compassion, and insight practices (Grossman & Van Dam, 2011; Shonin et al., 2014). Critics argue that removing mindfulness from its traditional ethical and philosophical context may dilute its integrity and potential, raising the question of whether current MBIs still reflect “right mindfulness” (*sammā sati*) as understood in Buddhism (Marx, 2015; Monteiro et al., 2015; Murphy, 2016).

Buddhist-informed theoretical models, such as the Buddhist Psychological Model proposed by Grabovac et al. (2011), describe mechanisms through which traditional mindfulness practices enhance wellbeing—through cultivating insight into impermanence, suffering, and non-self; fostering non-attachment; developing compassion; and supporting ethical living. These domains are only minimally represented within most first -generation MBIs (FG-MBIs) including MBCT. In response, some scholars have proposed “second-generation MBIs” (SG-MBIs), which deliberately reintegrate key Buddhist principles and contemplative methods (Van Gordon & Shonin, 2020). Mechanistic analyses of secular MBCT suggest that changes in mindfulness, rumination, worry, emotional reactivity, compassion, and meta-awareness constitute important pathways of therapeutic change (Gu et al., 2015; van der Velden et al., 2015). Taken together, these empirical findings and Buddhist-informed theoretical models suggest that while FG-MBIs and SG-MBIs may share core mechanisms, SG-MBIs may offer additional or incremental benefits through the inclusion of further contemplative and ethical mechanisms.

Empirical evaluations of SG-MBIs remain limited. One of the earliest interventions grounded in this approach was Meditation Awareness Training, an eight-week program that combined mindfulness with other contemplative practices aimed at cultivating ethical and impermanence awareness, loving-kindness and compassion, and insight into emptiness (Van Gordon et al., 2013). A small number of studies have examined whether integrating Buddhist-derived practices confers additional benefits beyond those of FG-MBIs. For example, a study comparing mindfulness training delivered with or without additional ethical instruction found reduction in stress, and improvement in life satisfaction and self-awareness in both groups; however, the ethics-enhanced intervention produced greater gains in personal growth and prosocial behaviour (Chen & Jordan, 2020). Another study comparing explicit versus implicit

Buddhist teachings within an MBI reported no group differences in empathy, but found that the SG-MBI produced larger increases in self-compassion and subjective wellbeing, whereas the FG-MBI resulted in greater improvements in mindfulness (Bayot et al., 2020). Another recent study that compared MBSR against an SG-MBI that combined MBSR with other Buddhist practices provided preliminary evidence of add-on effects of the latter on stress attenuation (Gamaiunova et al., 2022).

Studies evaluating Buddhist-informed interventions specifically for depression are particularly scarce. Turakitwanakan et al. (2017) investigated the effects of adding home-based Buddhist mindfulness meditation to standard psychiatric treatment for patients with major depressive disorder in Thailand. A higher proportion of participants in the meditation group showed improvement after six weeks compared to controls. Another Thai study compared a Buddhist group therapy—comprising weekly two-hour sessions over six weeks combined with home meditation practice—to standard care for diabetic patients with depressive symptoms (Rungreangkulkij et al., 2011). Participants in the Buddhist group therapy were 6.5 times more likely to achieve normal scores on the depression scale at six-month follow-up. This intervention explicitly incorporated key Buddhist principles, including the Four Noble Truths and the Three Marks of Existence.

In Sri Lanka, mindfulness has been practiced for over two millennia, dating back to the introduction of Theravada Buddhism by Mahinda Thero in the third century BCE (Berkwitz, 2012). Today, approximately 70% of the population identifies as Buddhist (Department of Census and Statistics, 2012). Despite this cultural embeddedness, the integration of mindfulness into modern mental health services has been limited. Contributing factors include the severe shortage of trained clinical psychologists, minimal opportunities for formal MBI training, and limited interdisciplinary collaboration in intervention development and delivery. With a population of over 22 million and approximately one in five people experiencing significant depressive symptoms (Alwis et al., 2023), there is a compelling need for scalable and culturally appropriate psychological interventions. Given the population's familiarity with Buddhist contemplative practices and the scarcity of secular MBCT programs, traditional Buddhist mindfulness (TBM) may represent a feasible and acceptable alternative for patients with depression (de Zoysa, 2011).

The present pilot randomized controlled trial (RCT) therefore aims to compare the efficacy, acceptability, and feasibility of a TBM intervention with secular MBCT among Sri Lankan Buddhist adults treated for depressive disorder but experiencing residual symptoms. As MBCT has been shown to be comparably efficacious to and more cost-effective than antidepressant maintenance treatment for residual depression (Kuyken et al., 2015), herein we compare directly to MBCT. We further examine whether TBM is non-inferior to MBCT in improving depressive symptoms and wellbeing; a non-inferiority (NI) design tests whether a new intervention is not unacceptably less effective than an established active treatment, within a pre-specified clinically meaningful margin. We also explore the effects of the interventions on self-compassion, mindfulness, and religiosity/spirituality (R/S). Finally, we investigate whether baseline levels and changes in these psychological characteristics predict treatment response.

Methods

Study Design and Setting

This was a pilot RCT comparing a TBM intervention with secular MBCT for adults experiencing residual depressive symptoms. The participants were recruited from [Blinded for Review] and the interventions were conducted at [Blinded for Review] in Sri Lanka, located in close proximity to one another. Participants in both groups completed an 8-week group intervention and completed pre- and post-intervention assessments. The study is reported according to CONSORT guidelines.

Participants

Eligibility criteria

Participants were adults (≥ 18 years) of self-report Buddhist faith with a clinical diagnosis of depressive disorder (single or recurrent episode) made in the [Blinded for Review] Psychiatry Clinic according to the International Classification of Diseases (ICD) 10th or 11th version. Inclusion required a Beck Depression Inventory-II (BDI-II) score > 13, indicating residual depressive symptoms of at least mild severity.

Exclusion criteria were: a current severe depressive episode or moderate–severe suicidal ideation (assessed via the Composite International Diagnostic Interview), recent antidepressant medication changes, inability to understand Sinhalese, or inability to attend weekly in-person sessions.

Screening and Recruitment

Clinic attendees with depressive disorder were screened with the self-administered BDI-II consecutively. Clinical notes were examined by a senior registrar in psychiatry to confirm the diagnosis of a depressive disorder. Written informed consent was obtained from individuals who met the eligibility criteria, and they were invited to participate in further baseline assessments. Eligible participants were randomized 1:1 at the time of pre-intervention assessment. Relevant sociodemographic and clinical data were obtained at baseline.

Randomization and Allocation Concealment

Simple randomization was performed using computer-generated random numbers. Allocation was concealed using sequentially numbered, opaque, sealed envelopes prepared by an independent administrator.

Interventions

Secular MBCT

The secular MBCT arm followed the standard 8-week, manualized program (Segal et al., 2002). Weekly 2-h group sessions were led by a senior registrar in psychiatry with > 6 years of personal meditation practice. Each group consisted of 8–12 participants. The program included guided sitting meditation, body scan, mindful movement, and cognitive exercises (e.g., Pleasant and Unpleasant Events Calendars). Participants were instructed to complete 40 minutes/day of home practice using guided recordings. All materials, including guided recordings, home record sheets and reading material, were adapted into the Sinhalese language from English-language material used in standard MBCT programs.

Traditional Buddhist Mindfulness (TBM)

TBM was delivered in 8 weekly 2-h sessions by a mindfulness practitioner with prior formal training in Buddhist psychology and counselling and extensive experience in practicing and teaching mindfulness. Relevant texts written by local Buddhist scholars (Rerukane Chandawimala, 2009a, 2009b; Walpola Rahula, 1974), *Suttas* from the *Tripitaka*, and content of previous Buddhist-derived interventions for depression (De Zoysa, 2011; Rungreangkulkij et al., 2011; Turakitwanakan et al., 2017) were examined in developing the TBM programme. Core practices in the program included sitting meditation, walking meditation, and loving-kindness meditation. Sessions incorporated teachings from the Pali Canon and fundamental Theravada Buddhist principles including the Four Noble Truths; the Noble Eightfold Path; the Three Marks of Existence; the Three Unwholesome Roots; the Four Immeasurables; and the Five Hindrances. Buddhist narratives and similes were used to illustrate concepts where appropriate. Participants were invited to engage in familiar religious practices such as offering flowers, lighting lamps, and silent chanting prior to meditation. The structure and content of the weekly sessions are outlined in Table 1. Daily home practice (~ 40 min) was recommended. Guided recordings or formal cognitive therapy exercises were not included.

Table 1
Structure of the Traditional Buddhist Mindfulness (TBM) Intervention

Week	Content
1	Introduction to the programme and its aims. Introduction to mindfulness of breathing with reference to the *Ānāpānasati Sutta* and the *Satipaṭṭhāna Sutta*. Introduction to and practice of sitting meditation.
2	Discussion of suffering (*dukkha*) and the causes of suffering, based on the Four Noble Truths. Introduction to *kāyānupassanā* (mindfulness of the body) and *vedanānupassanā* (mindfulness of feelings) as described in the *Satipaṭṭhāna Sutta*. Introduction to and practice of walking meditation.
3	Discussion of the Four Immeasurables (*mettā, karuṇā, muditā, upekkhā*), with reference to the *Karaṇīya Mettā Sutta*. Practice of loving-kindness meditation and engagement in Buddhist cultural practices (e.g. offering flowers, lighting lamps, and silent chanting) to support meditation practice.
4	Discussion of the Noble Eightfold Path as the path leading to the cessation of suffering. Emphasis on Right View (*sammā-diṭṭhi*) as a foundational component of the path, with reference to the *Anuggahita Sutta*. Practice of a structured sequence of loving-kindness, sitting, and walking meditation. Introduction to mindfulness in everyday life (with a mindful eating exercise).
5	Discussion of the Three Unwholesome Roots (*lobha* – greed, *dosa* – hatred, *moha* – ignorance). Developing awareness of thoughts arising from these roots through *cittānupassanā* (mindfulness of mind). Consolidation of meditation practices.
6	Discussion of the Three Marks of Existence (*anicca, dukkha, anattā*). Exploration of impermanence and non-self as applied to thoughts, emotions, and experiences, drawing on *dhammānupassanā*. Use of Buddhist narratives (e.g. the stories of Paṭācārā and Kisāgotamī) to illustrate impermanence. Consolidation of meditation practices.
7	Discussion of the Five Hindrances (*pañca nīvaraṇa*) and methods for overcoming them. Exploration of mental proliferation (*papañca*) and its role in psychological distress and conflict, with reference to the *Madhupiṇḍika Sutta*. Consolidation of meditation practices.
8	Reflection on progress made and challenges experienced during the programme. Discussion on sustaining mindfulness and meditation practices beyond the programme.

Concomitant Psychiatric Care

Participants in each group continued to receive stable doses of antidepressant and other psychotropic medications and relevant monitoring for physical health conditions from the Psychiatric Clinic of the [Blinded for Review]. None of them received any other form of psychological therapy during the period of the study.

Measures

Primary outcomes were depressive symptoms and psychological wellbeing. Secondary outcomes included mindfulness, self-compassion, and religiosity/spirituality. All primary and secondary outcome measures were self-administered and completed at baseline and immediately post-intervention. All data were anonymized and securely stored.

Beck Depression Inventory–II (BDI-II)

Depressive symptoms were measured using the BDI-II, a widely used 21-item self-report scale with strong psychometric properties, including high internal consistency, test–retest reliability, and good construct, concurrent, and discriminant validity (Beck et al., 2011; Wang & Gorenstein, 2013). A validated Sinhalese version is available for use in Sri Lanka (Rodrigo et al., 2015). Each item is rated 0–3, yielding a total score range of 0–63, with commonly used cut-offs indicating minimal (0–13), mild (14–19), moderate (20–28), and severe depression (29–63).

WHO-5 Well-Being Index

Subjective well-being was assessed using the WHO-5, a brief 5-item measure with robust international validity (Regional Office for Europe WHO, 1998; Topp et al., 2015). The Sinhala translation has demonstrated good internal consistency (α = 0.85), satisfactory two-week test–retest reliability (ICC = 0.82), and a confirmed single-factor structure in a Sri Lankan community sample (Perera et al., 2020). Each item is rated 1–5, and the total raw score ranges from 0 to 25 with higher scores indicating greater wellbeing. An example item from the scale is “I have felt cheerful and in good spirits.”

Six-Facet Mindfulness Questionnaire (SFMQ)

Trait mindfulness was assessed using the 20-item SFMQ, a Sinhala short form of the Five Facet Mindfulness Questionnaire (Baer et al., 2006; Baminiwatta et al., 2022). Factor-analytic work in Sri Lanka supported a six-factor structure—Observing, Describing, Nonjudging, Nonreactivity, Distract and Autopilot. Internal consistency was acceptable for the total scale (α = 0.70), and ranged between 0.67–0.72 for the subscales. The response to each item is scored on a scale of 1 to 5, where 10 items are reverse-scored, yielding a total mindfulness score out of 100. SFMQ total score was shown to correlate negatively with depression, anxiety and stress in the local validation sample. Example items from the scale include “When I do things, my mind wanders off and I’m easily distracted,” and “In difficult situations, I can pause without immediately reacting.”

Self-Compassion Scale–Short Form (SCS-SF)

Self-compassion was measured using the 12-item SCS-SF (Neff, 2003). The Sinhalese version has demonstrated acceptable psychometric properties, with evidence supporting a two-factor structure separating positive and negative items (de Zoysa et al., 2022). Each item is rated on a scale of 1 to 5, with 6 of the 12 items being reverse-scored, producing a self-compassion score out of 60. Example items from the scale include “When I’m going through a very hard time, I give myself the caring and tenderness I need,” and “I’m disapproving and judgmental about my own flaws and inadequacies.”

BENEFIT through Spirituality/Religiosity Scale

Perceived benefits of R/S were assessed using the BENEFIT through spirituality/religiosity scale (Büssing & Koenig, 2008). The scale has shown excellent reliability (α = 0.92) and a one-factor structure, and avoids tradition-specific religious terminology, making it suitable for both secular and multi-faith

contexts. It consists of 6 items each rated on a scale of 0 to 4, yielding a total score out of 24. A Sinhalese translation has been previously used in Sri Lankan research (Xue et al., 2016). Example items from the scale include “My spirituality/religiosity helps me to cope better with my illness” and “In everyday life, my spirituality or religiosity promotes my inner

strength.”

Acceptability and Feasibility

Acceptability was assessed using self-ratings on satisfaction and perceived usefulness (on a scale of 1–10) at the end of the intervention. Feasibility was evaluated using session attendance, retention rates and home practice. Retention was operationalized as attending ≥ 4 out of 8 sessions and completing the post-assessment. Although home practice records were provided to participants, due to poor maintenance and completion of the records, these data were omitted from the analysis. Instead, at the time of post-assessment, participants were asked to report the average duration of home practice per day and the number of days per week that they practiced at home.

Data Analysis

Analyses were conducted in IBM SPSS and figures were created using R. Group differences at baseline were examined using t-tests and χ^2 tests. Within-group pre–post changes were evaluated using paired t-tests. Between-group post-intervention effects were assessed using analysis of covariance (ANCOVA) controlling for baseline scores. Primary analysis followed the intention-to-treat (ITT) principle, where all randomized participants were included in the analysis. For the ITT analysis, missing data were handled using multiple imputation. A per-protocol sensitivity analysis was performed including only the participants who attended ≥ 4 sessions and completed the post-treatment assessment. Within-group effect sizes were calculated as Cohen’s d for paired samples, derived from pooled paired t statistics obtained from multiple-imputation analyses.

Non-inferiority margin

In this study, NI testing was used to determine whether TBM was not meaningfully less effective than MBCT. The NI margins were established with reference to minimal clinically important differences (MCIDs) and historical evidence for the efficacy of the active comparator (MBCT). The MCID for the BDI-II has been estimated at 5 points (Hiroe et al., 2005). Button et al.'s (2015) distribution-based approach, where a 17.5% reduction from baseline represents clinically meaningful change, also produced an MCID of approximately 5 points in the present sample (17.5% × 28.9 ≈ 5.1). In addition, meta-analytic findings (Goldberg et al., 2019) indicate that MBCT is superior to non-specific controls with an effect size of d = 0.71 (95% CI: 0.47–0.96), and the lower bound of this interval (d = 0.47) corresponds to approximately 4.2 BDI-II points when applying a standard deviation of 9 derived from a previous Sri Lankan sample of depressed individuals (Rodrigo et al., 2015). Thus, we chose a 2.5-point NI margin for the BDI-II, which would preserve 50% of the MCID (an approach adopted by previous non-inferiority trials such as Feldman

et al., 2016; Nolan et al., 2021) and about 60% of the conservative historical effect from meta-analytic findings (2.5/4.2 = 0.595).

For the WHO-5, the established MCID is 2.5 raw points or 10 points on its percentage scale (Topp et al., 2015); consistent with the approach above, we specified 1.25 points (50% of MCID) as the non-inferiority margin. Non-inferiority was therefore concluded if the lower bound of the 95% CI for the adjusted mean difference did not cross the prespecified margins (− 2.5 points for the BDI-II and − 1.25 points for the WHO-5).

Moderators and predictors of improvement

Three sets of regression analyses were conducted to address distinct questions. First, we examined *whether baseline psychological characteristics modified treatment effects* (moderation). For each outcome (BDI-II and WHO-5), post-treatment scores were regressed on treatment group, the centred baseline moderator (mindfulness, self-compassion, or R/S), their interaction term, and the corresponding baseline outcome score. A significant interaction term indicated moderation. Second, we assessed *whether baseline levels of the psychological variables predicted clinical response across both treatment arms* (baseline predictors). These models regressed post-treatment BDI-II or WHO-5 scores on each baseline mechanism variable while adjusting for baseline outcome score and group assignment. Third, we explored *whether changes in proposed mechanisms were associated with changes in outcomes* (mechanism–outcome associations). These models regressed change in BDI-II or WHO-5 scores on change in mindfulness, self-compassion, or R/S, controlling for baseline outcome score and group. All analyses were conducted across imputed datasets, and pooled regression coefficients, standard errors, and p-values were calculated using Rubin's rules.

Results

Participant Flow

Of the 230 patients assessed for eligibility, 138 met the inclusion criteria. Ninety-two patients provided consent to participate; however, only 66 completed the pre-intervention (baseline) assessment. These 66 participants were subsequently randomised to the two intervention arms (TBM = 34; MBCT = 32). Of those randomised, 53 participants attended four or more sessions, and 57 completed the post-intervention assessment. A CONSORT flow diagram is presented in Fig. 1.

Baseline Characteristics

Table 2 shows the baseline demographic and clinical characteristics of the two groups. Groups were comparable at baseline in gender composition but the TBM group was older (M = 52 years) than the MBCT group (M = 43.3 years; t = 2.75, df = 64, p = .008).

Table 2
Baseline characteristics of participants in the Traditional Buddhist Mindfulness (TBM) and Secular MBCT groups

Characteristic	TBM (n = 34)	Secular MBCT (n = 32)	Test statistic for group difference	p-value
Gender, n (%)	Female, 27 (79.4%) Male, 7 (20.6%)	Female, 23 (71.9%) Male, 9 (28.1%)	$\chi^2(1) = 0.51$	.475
Age, mean (SD)	52.0 years (12.9)	43.3 years (12.8)	$t(64) = 2.75$	.008**
Marital status, n (%)	Married, 25 (73.5%) Separated, 4 (11.8%) Single, 3 (8.8%) Widowed, 2 (5.9%)	Married, 23 (71.9%) Separated, 2 (6.3%) Single, 7 (21.9%) Widowed, 0	$\chi^2(3) = 4.29$	.231
Education, n (%)	Basic degree, 2 (6%) GCE A/L, 10 (30%) GCE O/L, 16 (49%) Primary, 5 (15%)	Basic degree, 2 (6%) GCE A/L, 12 (38%) GCE O/L, 18 (56%) Primary, 0	$\chi^2(3) = 5.29$	.152
Employment, n (%)	Unemployed, 26 (76.5%) Employed, 8 (23.5%)	Unemployed, 24 (75.0%) Employed, 8 (25.0%)	$\chi^2(1) = 0.02$	.889
Previous meditation experience, n (%)	Yes, 11 (32.4%) No, 23 (67.6%)	Yes, 17 (53.1%) No, 15 (46.9%)	$\chi^2(1) = 2.91$	.088
Diagnosis, n (%)	RDD, 9 (26.5%) SEDD, 25 (73.5%)	RDD, 13 (40.6%) SEDD, 19 (59.4%)	$\chi^2(1) = 1.48$	.223
Antidepressant class[a], n (%)	SSRI, 24 (70.5%) SNRI, 9 (26.5%)	SSRI, 24 (75%) SNRI, 7 (21.9%)	NA[b]	-

Note: MBCT = mindfulness-based cognitive therapy; TBM = traditional Buddhist mindfulness; RDD = recurrent depressive disorder; SEDD = single-episode depressive disorder; BDI-II = Beck Depression Inventory–II; SFMQ = Six-Facet Mindfulness Questionnaire; WHO-5 = World Health Organization-5 Well-Being Index.

Characteristic	TBM (n = 34)	Secular MBCT (n = 32)	Test statistic for group difference	p-value
	Other, 5 (14.7%)	Other, 3 (9%)		
Pharmacological augmentation, n (%)	Antipsychotic, 8 (23.5%) Lamotrigine, 1 (2.9%)	Antipsychotic, 7 (21.9%) Lithium, 1 (3.1%)	NA[b]	-
Prior psychotherapy, n (%)	Yes, 1 (2.9%) No, 33 (97.1%)	Yes, 2 (6.3%) No, 30 (93.7%)	NA[b]	-
BDI-II score, mean (SD)	28.85 (11.65)	28.91 (11.28)	t(64)=-0.02	.985
SFMQ score, mean (SD)	57.66 (11.96)	57.10 (12.55)	t(61) = 0.18	.855
Self-Compassion Scale score, mean (SD)	36.57 (8.08)	35.57 (9.33)	t(63) = 0.46	.646
WHO-5 Wellbeing Index, mean (SD)	8.28 (5.11)	8.53 (7.10)	t(61)=-0.16	.871
BENEFIT from Religiosity/Spirituality score, mean (SD)	32.56 (7.50)	30.56 (7.48)	t(62) = 1.07	.290

Note: MBCT = mindfulness-based cognitive therapy; TBM = traditional Buddhist mindfulness; RDD = recurrent depressive disorder; SEDD = single-episode depressive disorder; BDI-II = Beck Depression Inventory–II; SFMQ = Six-Facet Mindfulness Questionnaire; WHO-5 = World Health Organization-5 Well-Being Index.

Participants could be receiving more than one class of antidepressant medication. [b]Group differences were not tested for some variables because categories were not mutually exclusive or cell counts were insufficient for valid χ^2 testing. **p < .01

The baseline BDI-II scores in the two groups were similar (M = 28.9, SD = 11.7 in TBM; M = 28.9, SD = 11.3 in MBCT; t=-0.019, df = 64, p = .985). According to BDI-II cut-off scores, symptom severity was mild for 7 patients in each group, moderate for 12 patients in each group, and severe for 12 patients in MBCT and 14 patients in the TBM group. Differences in baseline scores for the other outcome measures (mental wellbeing, mindfulness, self-compassion, and religiosity/spirituality) were also not statistically significant.

Primary Outcomes

Depressive Symptoms (BDI-II)

In the ITT analysis, both interventions produced substantial and statistically significant reductions in depressive symptoms. Participants in the TBM arm showed a mean decrease of 13.1 points ($t = -5.4$, $p < .001$), and those in the MBCT arm showed a mean decrease of 12.9 points ($t = -6.5$, $p < .001$). The effect size of within-group reductions in depressive symptoms was large in both groups (MBCT: Cohen's $d = 1.15$; TBM: Cohen's $d = 0.93$).

BDI-II response rates (≥ 50% reduction from baseline) were 48.0% for TBM and 53.6% for MBCT, with no significant difference between groups ($\chi^2 = 0.164$, $p = .685$). MCID-based response rates (> 5-point reduction) were also similar (TBM 77.8%, MBCT 73.3%; $\chi^2 = 0.151$, $p = .697$).

Between-group comparisons using ANCOVA indicated no significant post-intervention differences. Non-inferiority of TBM relative to MBCT was not demonstrated: the confidence interval for the adjusted mean difference (TBM – MBCT) was − 0.16 (95% CI − 5.4 to 5.1), which crossed the predefined − 2.5-point non-inferiority margin (Fig. 2). Adjustment for gender and age produced similar results. The per-protocol analysis also yielded comparable findings and failed to demonstrate non-inferiority.

Psychological Wellbeing (WHO-5)

Both groups showed significant within-group improvements in psychological wellbeing. The TBM group improved by a mean of 6.8 points ($t = 5.4$, $p < .001$), and the MBCT group improved by 6.9 points ($t = 5.4$, $p < .001$). The effect size of within-group improvements in psychological wellbeing were large in both groups (MBCT: Cohen's $d = 0.95$; TBM: Cohen's $d = 0.93$).

Between-group ANCOVA revealed no significant differences in post-intervention WHO-5 scores. As with depression outcomes, non-inferiority was not demonstrated: the adjusted mean difference of − 0.2 (95% CI − 3.2 to 2.8) crossed the prespecified − 1.25-point margin (Fig. 2).

Secondary Outcomes

Mindfulness

Mindfulness scores increased significantly in both groups. The SFMQ score increased by a mean of 7 points in the TBM arm ($t = 3.2$, $p = .002$) and by 9.6 points ($t = 4.4$, $p < .001$) in the MBCT group. No significant between-group differences in post-intervention scores were observed (Mdiff = -2.57, $p = .353$).

Self-Compassion

Self-compassion improved significantly in both TBM and MBCT. The SCS score increased by a mean of 5.2 points in the TBM arm ($t = 2.7$, $p = .007$) and by 4.5 points ($t = 2.6$, $p = .009$) in the MBCT group. Between-group ANCOVA revealed no significant differences in post-intervention SCS scores (Mdiff = 1.12, $p = .631$).

Religiosity/Spirituality

A significant improvement in the BENEFIT score was observed only in the TBM group (mean increase = 1.4, t = 2.3, p = .023). BENEFIT score increased by a mean of 1.2 in the MBCT group, but this was marginally statistically insignificant (t = 1.9, p = 0.057). Between-group ANCOVA revealed no significant differences in post-intervention BENEFIT scores (Mdiff = .474, p = .578).

Feasibility and Acceptability

Feasibility was assessed using session attendance, retention rates and home practice duration. The median number sessions attended was 6 in the TBM and 7 in the MBCT group, but the differences in the number of sessions attended was not statistically significant (Mann Whitney U = 617.5, p = .333). Retention rate (proportion of participants attending ≥ 4 sessions and completing the post-assessment) was not statistically different between the TBM (25/34, 73.5%) and MBCT (26/32, 81.3%) groups (χ^2=0.056, df = 1, p = .454). Based on self-reports obtained at the end of the intervention, the average duration of home practice was 37.5 minutes (SD = 27) in TBM (n = 22) and 34.2 minutes (SD = 25) in MBCT (n = 26). The median number of days per week where home practice was done was 5 for TBM and 6 for MBCT. The total duration of practice per week did not differ significantly between the two groups (Mann Whitney U = 266, p = .965).

Acceptability was assessed using satisfaction and perceived usefulness ratings. Mean self-report satisfaction score (out of 10) was 9.3 in TBM and 9.5 in MBCT, and its distribution was similar between the groups (Mann Whitney U = 410, p = .597). Perceived usefulness scores were also comparable between TBM (M = 9) and MBCT (M = 9.8; Mann Whitney U = 455.5, p = .116). No serious adverse events were reported in either group during the interventions.

Moderators and predictors of improvement in outcomes

Moderation analysis

Moderation analyses indicated that baseline levels of mindfulness, self-compassion, and R/S did not significantly moderate the effects of treatment group on changes in depressive symptoms or wellbeing (all interaction p-values > .05), indicating that these baseline psychological characteristics did not influence the comparative efficacy of TBM versus MBCT (Table 3).

Table 3
Moderation of Treatment Effects by Baseline Psychological Variables

Baseline Moderator	BDI-II		WHO-5	
	Interaction (B)	p-value	Interaction (B)	p-value
Mindfulness	-0.124	.557	0.214	.076
Self-Compassion	-0.102	.732	0.309	.073
Religiosity/Spirituality	-0.006	.992	-0.112	.711

Note. Interaction terms represent Group × Moderator effects from linear regression models adjusting for baseline outcome scores. None of the moderators significantly altered treatment effects for either outcome. BDI-II = Beck Depression Inventory–II; WHO-5 = World Health Organization-5 Well-Being Index.

Baseline predictors

A series of ANCOVA models were run to examine whether baseline scores of self-compassion, mindfulness and R/S predicted improvement in outcomes scores independent of treatment group (Table 4).

Table 4
Baseline Predictors of Improvement in Outcome Measures

Baseline Predictor	BDI-II		WHO-5	
	B	p-value	B	p-value
Baseline Mindfulness	-0.234	.024*	0.139	.036*
Baseline Self-Compassion	-0.361	.017*	0.095	.315
Baseline Religiosity/Spirituality	-0.390	.160	0.487	.002**

Note. All models adjust for baseline outcome score and intervention group. Regression coefficients (B) represent unstandardized estimates. BDI-II = Beck Depression Inventory–II; WHO-5 = World Health Organization-5 Well-Being Index. *p < .05 **p < .01

Higher baseline mindfulness significantly predicted greater reductions in depressive symptoms (B = − 0.23, p = .024). Higher baseline self-compassion also predicted greater improvement in depressive symptoms (B = − 0.36, p = .017). Baseline R/S did not significantly predict change in BDI-II scores.

For wellbeing outcomes (WHO-5), higher baseline R/S (B = 0.49, p = .002) and higher baseline mindfulness (B = 0.14, p = .036) emerged as significant positive predictors of improvement. Baseline self-compassion was not associated with WHO-5 change.

Mechanism-outcome associations

To investigate whether changes in the pre-specified mechanisms (self-compassion, mindfulness and R/S) are associated with changes in the outcome measures (BDI-II and WHO-5), a series of regression analyses were performed. Changes in self-compassion, mindfulness, and R/S did not significantly predict depressive symptom change (Table 5).

Table 5
Mechanism–Outcome Associations

Mechanism Change Predictor	**ΔBDI-II**		**ΔWHO-5**	
	B	**p-value**	**B**	**p-value**
ΔReligiosity/Spirituality	-0.418	.073	0.195	.250
ΔSelf-Compassion	-0.162	.316	0.248	.007*
ΔMindfulness	-0.198	.100	0.045	.530

Note. All models adjust for baseline outcome score and intervention group. BDI-II = Beck Depression Inventory–II; WHO-5 = World Health Organization-5 Well-Being Index. **p < 0.01

For wellbeing (WHO-5), change in self-compassion emerged as a significant predictor (B = 0.26, 95% CI 0.05–0.47, p = .016), indicating that participants who showed larger increases in self-compassion reported greater improvement in wellbeing. The other two mechanism variables did not contribute significantly to WHO-5 change.

Discussion

In this pilot RCT, we compared the efficacy, acceptability, and feasibility of a TBM intervention with secular MBCT among Buddhist adults in Sri Lanka experiencing residual depressive symptoms while receiving antidepressant treatment. Both interventions were associated with substantial and clinically meaningful improvements in depressive symptoms and psychological wellbeing. These findings are consistent with the prior evidence supporting MBCT for residual and active depressive symptoms (Goldberg et al., 2019; Strauss et al., 2014), as well as with emerging evidence suggesting that Buddhist-informed and SG-MBIs may be useful in managing depression (Rungreangkulkij et al., 2011; Turakitwanakan et al., 2017; Van Gordon & Shonin, 2020).

The failure to demonstrate non-inferiority in this study does not indicate that TBM is inferior to MBCT. Instead, this is likely attributable to the pilot nature of the study and limited statistical power. Non-inferiority trials require large samples to yield sufficiently narrow confidence intervals, particularly when conservative margins are applied (Mauri & D'Agostino, 2017; Stefanos et al., 2020). Both interventions nevertheless produced reductions in BDI-II scores that substantially exceeded the MCID (Hiroe et al., 2005), as well as improvements in WHO-5 wellbeing scores well above established thresholds for clinically meaningful change (Topp et al., 2015). These findings suggest that TBM achieved outcomes that were clinically comparable to those of MBCT, even if statistical non-inferiority could not be formally concluded.

Feasibility and acceptability indicators, including session attendance, retention, satisfaction, perceived usefulness, and engagement in home practice, were similar across groups. Attrition rates of approximately 20% in each group compare favorably with pooled estimates from MBI trials, where dropout rates of around 30% are commonly reported (Nam & Toneatto, 2016; Wang et al., 2025). Self-reported home practice duration and frequency were also consistent with international estimates which suggest that participants in MBCT/MBSR studies engage in home practice 30 minutes a day, 6 days a week, on average (Parsons et al., 2017). This indicates that both interventions were acceptable and practically implementable in this outpatient clinical setting.

From a service-delivery perspective, TBM may offer particular advantages in low-resource settings such as Sri Lanka. Sri Lanka has a high burden of depression in the community, with a significant treatment gap (Alwis et al., 2023). As noted above, there is a severe shortage of clinical psychologists in Sri Lanka, which makes the wider dissemination of any formal psychological intervention including MBCT greatly challenging. Furthermore, formal MBCT training pathways for psychologists are also scarce. In contrast, Buddhist mindfulness practices are culturally familiar, widely available, and easily accessible for many Sri Lankans (De Zoysa, 2011; de Zoysa, 2016; Tilakaratne, 2021). It has been argued that culturally sensitive interventions potentially confer greater benefits in terms of efficacy, acceptability and feasibility, with some evidence supporting this notion (Griner & Smith, 2006; Hall et al., 2016). Culturally sensitive interventions can take the form of an evidence-based intervention adapted for a specific cultural context (e.g. translating content into local languages), or a new intervention developed for a specific cultural setting (Bernal et al., 2009; Kalibatseva & Leong, 2014). In our study, we have used both approaches, as MBCT was adapted into the Sinhalese language, and TBM was developed as an intervention tailored for Sri Lankan Buddhist adults with depression. Given the positive findings for TBM, it may represent a scalable and contextually appropriate complement to existing pharmacological treatments for depression in Sri Lanka.

This study thus contributes to the small but growing literature on SG-MBIs, which explicitly reintegrate ethical, philosophical, and spiritual elements derived from Buddhist traditions (Shonin et al., 2014; Van Gordon & Shonin, 2020). Direct comparisons between SG-MBIs and FG-MBIs such as MBCT remain rare, and to our knowledge, this is the first RCT to directly compare a Buddhist mindfulness intervention with secular MBCT in a clinical depression sample. The TBM intervention in our study contained elements from each of the “three trainings” or *triśikṣā* described in Buddhism – ethics, concentration, and wisdom – thereby going beyond the concentrative practices that are heavily emphasized in MBCT. The potential relevance of ethics and wisdom for the therapeutic benefits of MBIs are becoming increasingly recognized (Furnell et al., 2024).

Perceived benefits from R/S increased significantly only in the TBM group, reflecting the deliberate inclusion of religious practices and teachings in this group. While secular MBIs have been shown to increase spirituality even when explicitly non-religious (Landau & Jones, 2021), such changes may be particularly adaptive in predominantly Buddhist settings. R/S are established predictors of better mental health outcomes, including reduced risk of depression and faster remission from depression (Bonelli et

al., 2012; Braam & Koenig, 2019; Garssen et al., 2021). In the present study, baseline R/S predicted improvements in wellbeing but not depressive symptoms, suggesting that engagement with religious practices may preferentially enhance wellbeing rather than symptom reduction per se. Prior work has highlighted the relevance of religious activities for behavioural activation in Sri Lankan adaptations of cognitive behavioural therapy for depression (Rodrigo, 2020).

Consistent with prior research, both mindfulness and self-compassion increased significantly in each intervention arm (Gu et al., 2015; van der Velden et al., 2015). However, changes in neither construct predicted reductions in depressive symptoms. In contrast, increases in self-compassion—but not mindfulness—were associated with improvements in wellbeing across groups. This pattern suggests that self-compassion may function as a more immediate mechanism of wellbeing change than mindfulness, particularly when wellbeing rather than symptom reduction is the outcome of interest. This finding is congruent with meta-analytic evidence demonstrating particularly strong associations between self-compassion and wellbeing (Zessin et al., 2015), and with theoretical models emphasizing self-compassion as a key transdiagnostic resource for psychological wellbeing (Neff & Germer, 2017). Cultural factors may have also influenced our observations. In collectivist and interdependent cultural contexts, such as in Sri Lanka, certain facets of self-compassion such as “common humanity” may be especially salient in mitigating self-criticism and enhancing wellbeing (Arimitsu, 2023). Therapeutic factors in group settings such as shared experience, socialization and group cohesion may have supported enhanced wellbeing in both groups (Hutchinson et al., 2021).

Furthermore, therapist characteristics warrant consideration. In this study, MBCT was delivered by a medical doctor, whereas TBM was delivered by a lay mindfulness practitioner and counsellor. In Sri Lanka, doctors are accorded considerable social authority, which may have influenced participant engagement, expectations, or perceived credibility. Conversely, TBM is often traditionally delivered by Buddhist clergy, who hold a distinct form of moral and spiritual authority. Future research should examine whether TBM outcomes differ depending on whether the intervention is delivered by lay practitioners, clinicians, or ordained clergy, and whether therapist role interacts with participant expectations and treatment response.

Limitations

Several limitations should be considered when interpreting these findings. The pilot nature of the study and relatively small sample size limited statistical power, particularly for non-inferiority testing, moderation analyses, and mechanism–outcome associations, resulting in wide confidence intervals. Additionally, the sample was restricted to Buddhist participants and the intervention was delivered exclusively in Sinhala, which limits generalizability to non-Buddhist and Tamil-speaking populations within Sri Lanka.

Participants were recruited from a single tertiary-level outpatient clinic, and findings may therefore not generalize to primary care or community settings. Moreover, the absence of an inactive or treatment-as-

usual control group precludes conclusions about absolute treatment effects beyond non-specific factors. Outcomes were assessed using self-report measures only, without clinician-rated post-intervention assessments, raising the possibility of reporting or expectancy biases. Home practice was assessed retrospectively at the post-intervention stage, rather than using contemporaneous practice logs, limiting precision in adherence measurement. While no serious adverse events were reported in either group, a formal assessment of minor adverse effects was not conducted, which precluded comparison of potential harms from the interventions. Furthermore, the differences in the psychopharmacological treatment of participants and their relationship with the improvements were not investigated. Finally, therapist effects could not be disentangled from intervention effects, as TBM and MBCT were delivered by facilitators with different professional backgrounds.

Conclusion

This pilot RCT compared a TBM intervention with secular MBCT among Sri Lankan Buddhist adults with residual depressive symptoms receiving antidepressant treatment. Both interventions were associated with substantial and clinically meaningful improvements in depressive symptoms and psychological wellbeing, alongside comparable acceptability and feasibility. Although TBM did not meet the prespecified criteria for non-inferiority relative to MBCT, the magnitude of improvement in both primary outcomes suggests broadly comparable clinical benefits.

The findings provide preliminary support for TBM as a culturally congruent and feasible psychological intervention in a low-resource setting where access to trained MBCT therapists is limited and where mindfulness practices are already embedded in religious and cultural life. The selective increase in perceived benefits from R/S in the TBM group highlights the potential value of culturally sensitive interventions that extend beyond symptom reduction alone.

These results support further evaluation of TBM in larger, adequately powered trials with more diverse populations. Future research should examine the durability of effects, clarify mechanisms of change, and explore optimal delivery models, including the role of facilitator background. TBM may represent a promising and scalable complement to existing treatments for depression in Sri Lanka and similar cultural contexts.

Declarations

Conflicts of interest:

The authors declare that they have no conflict of interest.

Ethical Standards

Ethical approval was obtained from the relevant Ethics Review Committee, and the study was conducted in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Author Contribution

A.B., M.C., T.H. and N.T.V. contributed to the study conception and design. Material preparation, data collection and data entry were performed by A.B., S.D., A.M., and S.D. Data analysis was performed by A.B. and checked by N.T.V. The first draft of the manuscript was written by A.B. and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data Availability

De-identified datasets used in this study are available on the Open Science Framework (OSF) at https://osf.io/2pgz7/.

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Figures

Figure 1: CONSORT 2025 Flow Diagram

Flow diagram of the progress through the phases of a randomised trial of two groups (that is, enrolment, intervention allocation, follow-up, and data analysis)

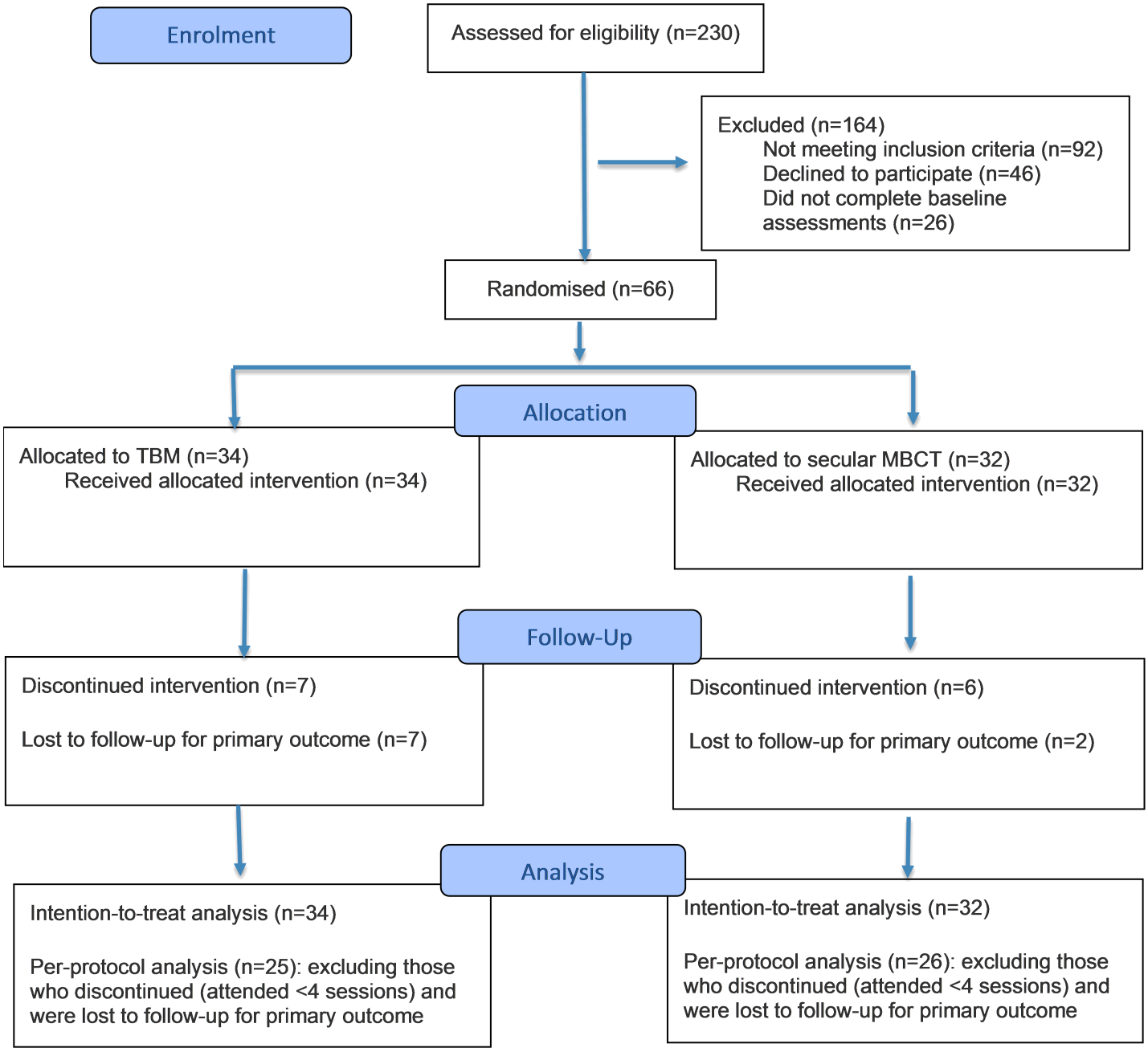


Figure 1

See image above for figure legend

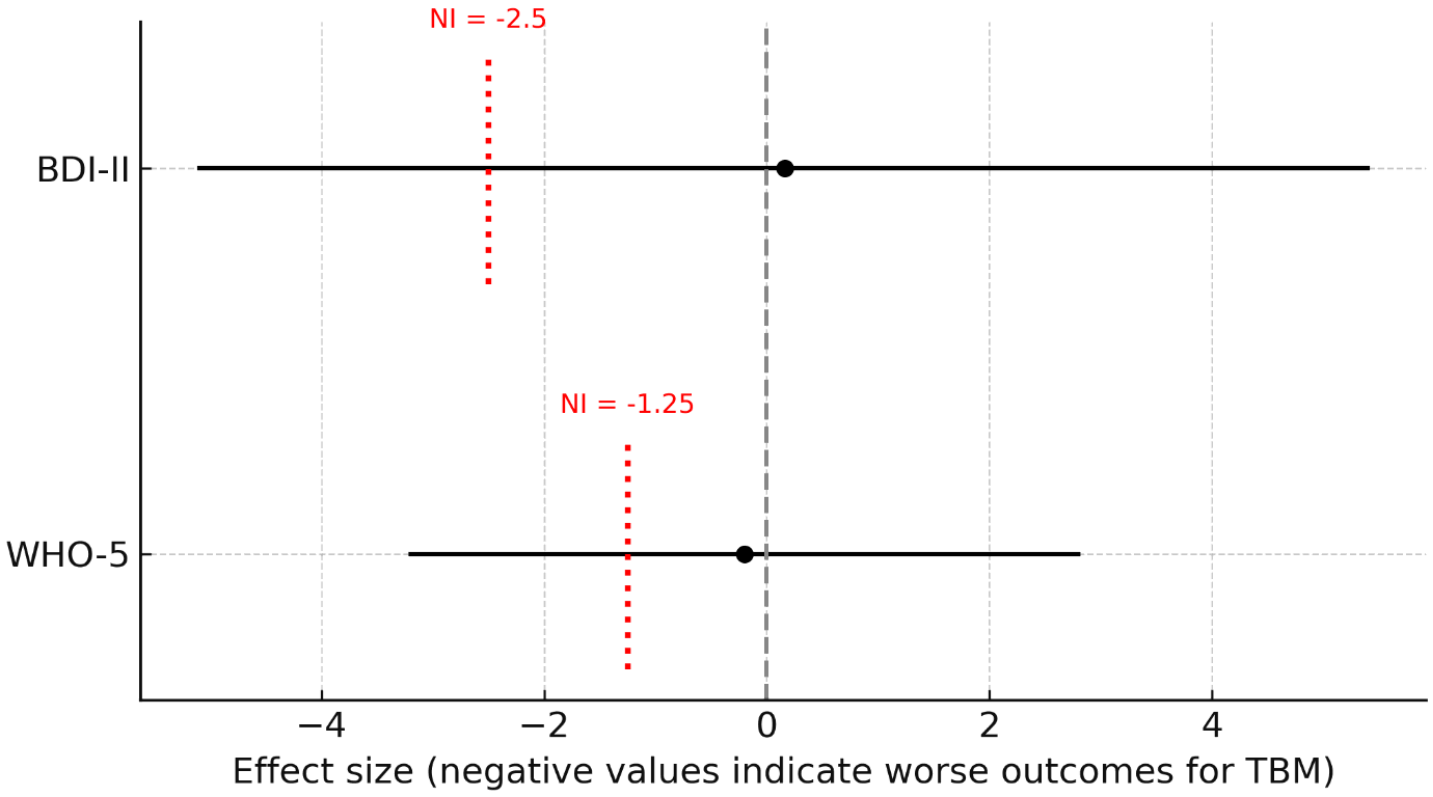


Figure 2

Non-inferiority analysis for depressive symptoms (BDI-II) and psychological wellbeing (WHO-5). Points represent adjusted between-group mean differences, and horizontal lines indicate 95% confidence intervals. Vertical dashed lines denote prespecified non-inferiority margins. Non-inferiority was not demonstrated as confidence intervals crossed the margins.