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EFFECTIVENESS OF GROUP-BASED COGNITIVE BEHAVIORAL THERAPY IN REDUCING DEPRESSION AND ANXIETY AMONG ADOLESCENTS IN RESIDENTIAL INSTITUTIONS: A RANDOMIZED CONTROLLED TRIAL

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Abstract

Research on cognitive behaviour therapy (CBT) for depressed and anxious orphaned adolescents in Malaysian sheltered homes is limited. This randomised controlled trial evaluated the effectiveness of group CBT, known as the SAHABAT programme, compared to a waitlist control. One hundred thirty-nine orphaned adolescents from nine sheltered homes participated: SAHABAT (4 homes, $n = 71$) and waitlist control (5 homes, $n = 68$), selected through clustered sampling. The SAHABAT group attended eight sessions over a month, while the control group received no intervention. Psychological outcomes were assessed at six-time points over six months using five self-report questionnaires. Generalised linear multi-modelling analysis showed that the SAHABAT programme had mild to moderate effects in reducing depression ($\eta^2 = .05$), anxiety ($\eta^2 = .05$), negative automatic thoughts ($\eta^2 = .05$), and anger ($\eta^2 = .07$). It also significantly improved self-esteem ($\eta^2 = .02$). Depression symptoms reduced from mild to minimal, anxiety from moderate to mild, negative automatic thoughts from high to low, and anger from mildly elevated to normal, while self-esteem increased. The SAHABAT programme positively impacted mental health outcomes over six months post-intervention. The findings highlight SAHABAT's positive impact and the need for enhanced mental health policies for vulnerable adolescents in Malaysia.

Keywords: Anxiety, depression, group cognitive behavioural therapy, negative automatic thoughts, orphaned adolescents, self-esteem

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Official statistics on orphans and orphanages in Malaysia remain limited, resulting in insufficient information regarding the mental health and well-being of orphaned children. Recent estimates indicate that approximately 64,000 children reside in institutional care, encompassing both registered and unregistered government and private orphanages (OrphanCare Foundation, 2020). These institutions frequency house a heterogeneous population comprising orphans and non-orphans from diverse family circumstances (Registrar of Societies Malaysia, 2013).

Studies indicate that more than 80% of children and adolescents residing in Malaysian orphanages or foster care facilities experience significant mental health issues, a stark contrast to the approximately 20% prevalence observed in the general adolescent population (Jayakumar, 2023). Orphans in institutional care frequently demonstrate elevated levels of emotional distress, including depression, anxiety, and diminished self-esteem (Mohammadzadeh et al., 2018). In Malaysia, reported prevalence rates of depression and anxiety among institutionalised youth range from 70.9% to 85.2% and 80.1% to 82.3%, respectively, with 64.1% experiencing comorbid symptoms (Mukhtar et al., 2021; Mohammadzadeh et al., 2018). Higher levels of depression and anxiety are strongly associated with increased negative automatic thoughts (Mukhtar et al., 2021), while 84.7% of institutionalised adolescents report experiencing stress and 70% exhibit low self-esteem (Mohammadzadeh et al., 2018). Collectively, these findings underscore the substantial emotional burden faced by this population and the urgent need for effective, targeted mental health interventions for vulnerable institutionalised youth.

For decades, cognitive behavioural therapy (CBT) has been widely recognised as an effective intervention for adolescent depression and anxiety (James et al., 2015; Keles & Idsøe, 2018; Kreuze et al., 2018; Zhou et al., 2015) as well as anger-related difficulties (Dejid, Delgerjav, & Tsogzolmaa, 2022). CBT has been shown to effectively reduce negative automatic thoughts in adolescents, with cognitive restructuring was mediating improvements in depressive and anxiety symptoms (Topper et al., 2023). Emerging evidence further demonstrates that CBT reduces ruminative thoughts (Mirzaian et al., 2023) and self-harming cognitions (Elahabadi, 2025). Mediation findings additionally indicate that decrease in negative automatic thoughts partially account for broader reductions in depression and anxiety, underscoring the central importance of targeting maladaptive cognitions in adolescent CBT (Florean et al., 2024).

Randomised control trials (RCTs) evaluating CBT have consistently reinforced its efficacy. Meta-analysis evidence demonstrates that CBT significantly reduces subclinical depressive symptoms in youths both immediately post-treatment and at subsequent follow-up assessments (Gearing et al., 2013; James et al., 2015; Keles & Idsøe, 2018; Rasing et al., 2017; Weisz et al., 2006, Zhou et al., 2015). In Malaysia, Saw et al. (2020) reported that the STAR school-based CBT programme

produced significant reductions in adolescent depressive symptoms compared with a waitlist control. However, most Malaysian research examining CBT for adolescent depression and anxiety is limited to case studies (Chee et al., 2023) and lacks comparison groups (Zakaria et al., 2021). Only a small number of RCTs targeting anxiety among Malaysian adolescents exist, and those that do primarily focus on non-CBT interventions (Ab Ghaffar et al., 2019; Mohammadzadeh et al., 2020).

Globally, CBT programmes such as Coping Cat and FRIENDS have met the criteria for empirically supported treatment and have demonstrated effectiveness in both preventing and treating anxiety disorders and depression among school-aged children and adolescents (Cooper & Jacobs, 2011; Hollon & Beck, 2013). Their efficacy has also been documented across diverse and underserved contexts, including economically disadvantaged urban communities (Cooley-Strickland et al., 2011), children and adolescents from low socio- economic backgrounds in Puerto Rico (Rodgers & Dunsmuir, 2015), and orphaned youth in Mexico orphanages (Gallegos-Guajardo et al., 2015).

Similarly, a universal school-based CBT package in Sri Lanka yielded significant post-intervention increases in self-esteem and reductions in depressive and anxiety symptoms, although these effects were less stable at follow-up (Perera et al., 2020). Additionally, an RCT incorporating problem-solving and assertiveness training demonstrated improvements not only in self-esteem but also in overall mental health, problem-solving abilities, and communication skills among adolescent girls (Sharif et al., 2021). Collectively, these findings indicate that CBT-based interventions are effective in enhancing adolescent self-esteem while simultaneously improving broader emotional and functional outcomes.

Furthermore, CBT is widely recognised as an effective intervention for anger in adolescent (Matthys & Schutter, 2021), incorporating skills such as emotion recognition, relaxation, and problem-solving to reduce aggressive responses. Although traditional CBT yields small to moderate effects, emerging evidence indicates that exposure-based and mechanistically informed approaches show greater promise, particularly by targeting underlying processes such as frustration tolerance and emotion regulation (Naim et al., 2023). School-based anger management programmes similarly report improvements in communication and problem-solving skills, although their effectiveness varies depending on delivery format and the degree of caregiver involvement (Anjanappa et al., 2023). Overall, CBT remains a first-line psychosocial treatment for adolescent anger, with growing support for adapted interventions design to enhance long-term outcomes (Richard et al., 2022).

Despite CBT being widely recognised as the gold standard in psychotherapy, with substantial evidence demonstrating its superiority or equivalence to alternative treatments (David et al., 2018), rigorous outcome research in Malaysia, particularly RCTs involving adolescents and orphaned youth remains limited. Existing local

studies are scarce, often relying on randomized control designs, and rarely assess multiple internalising and emotional outcomes simultaneously. Furthermore, there is a notable lack of published RCTs in Malaysia evaluating the effectiveness of group-based CBT programmes, and no study to date has examined the SAHABAT programme (Mukhtar, 2014) using procedures consistent with CONSORT 2010 guidelines.

Purpose of the Study

This study addresses these gaps by conducting a CONSORT-aligned RCT comparing group-based CBT (SAHABAT programme) with a waitlist control to evaluate its effectiveness in reducing depression, anxiety, anger, and negative automatic thoughts, and in enhancing self-esteem among Malaysian orphaned adolescents residing in non-government- run sheltered homes. SAHABAT, a Malay term meaning "friends," reflects the programme's emphasis on supportive, peer-based learning. By generating robust RCT evidence, this study has the potential to inform and strengthen mental health interventions for this vulnerable population.

Method

Pilot Study

A preliminary pilot study was conducted to evaluate the feasibility, acceptability, and potential effectiveness of the SAHABAT programme, as well as its suitability for replication in similar settings. Forty orphaned adolescents were initially screened for symptoms of depression and anxiety using the Beck Depression Inventory–Malay version (BDI-Malay; Beck, 1961; Mukhtar & Oei, 2008) and the Beck Anxiety Inventory–Malay version (BAI- Malay; Beck et al., 1988; Mukhtar & Zulkefly, 2011). Nineteen adolescents aged 13–17 years, residing in a Malay-operated, non-governmental sheltered home in Selangor and meeting criteria for depression (BDI-Malay $\geq$ 10) and anxiety (BAI-Malay $\geq$ 8), were recruited to participate. Participants engaged in eight bi-weekly group sessions of the SAHABAT programme over one month. Findings indicated that the SAHABAT programme was feasible, well-received by participants, culturally adaptable, and effective in alleviating depressive and anxious symptoms, supporting its potential for replication in similar contexts.

Primary Study

Sampling

A randomized controlled trial (RCT) was conducted. The sampling frame, comprising both orphans and non-orphans residing in Malay-operated, non-governmental sheltered homes, was compiled using records from the Registrar of Societies Malaysia, the Department of Social Welfare Malaysia, and the Department of Islamic Selangor. Selangor was selected as the study site due to its accessibility to a high number of registered sheltered homes that can potentially draw a larger sample size and the relatively high prevalence of adolescent depression and anxiety compared to other Malaysian states (Institute for Public Health, 2022). Government-run sheltered homes were excluded to ensure consistency in governance and facilities, and minimize potential sources of bias. Moreover, government-run sheltered homes were not included because there are very few of them in Malaysia. Most residential facilities for children and adolescents are run by non-governmental organizations, making nongovernmental-run homes more accessible and representative for this study. Cultural and linguistic considerations were prioritized, focusing on Malay-operated, non-governmental homes to ensure contextual relevance and reduce language barriers.

Administrators and participants were briefed on the purpose, duration, and procedures of the study. Informed consent was obtained from home administrators, who served as legal guardians for the adolescents.

The inclusion and exclusion criteria for the RCT of this study were determined by the study authors, both of whom are experienced clinical psychologists. Sheltered homes were eligible for inclusion if they were Malay-operated, non-governmental facilities providing accommodation, food, financial assistance, medical access, and national-school education to underprivileged children and adolescents, including both orphans and non-orphans. Exclusion criteria comprised government-run sheltered homes, non-Malay-operated sheltered homes, religious schools, homeschooling centres, and management offices that do not provide residential care. Facilities were also excluded if they housed fewer than three adolescents, accommodated adults or older persons, or served populations with physical or intellectual disabilities. Kindergartens, childcare centres, nursing homes, and community service centres were similarly excluded.

A multi-stage cluster sampling strategy was utilised. Seventeen Malay-operated, non- governmental sheltered homes initially met the eligibility criteria; however, eight withdrew prior to recruitment, resulting in nine homes being retained as the final sampling units. By coincidence, each of these homes was located in a different district of Selangor, forming nine distinct clusters. The Accuracy in Parameter Estimation (AIPE) method was applied to enhance precision in population

parameter estimation, ensuring adequate sample sizes with appropriately narrow confidence intervals.

This study employed a two-arm, parallel, open, single-blinded RCT with a pre-test and post-test experimental design. The objective was to compare the effectiveness of the SAHABAT programme with that of a waitlist control condition in reducing depression, anxiety, negative automatic thoughts, and anger, as well as in enhancing self-esteem. Single-blinded simple lottery randomisation was employed to allocate the participating sheltered homes to either the intervention or waitlist control group.

Participants

Eligible participants were invited to voluntarily participate, with explicit clarification of the study objectives, expectations, and their right to withdraw at any time. Participants were eligible if they were orphans aged 13–17 years exhibiting depressive and/or anxiety symptoms (BDI-Malay ≥ 10; BAI-Malay ≥ 8), had resided in the shelter for at least one day, and demonstrated proficiency in the Malay language. Exclusion criteria included being a non- orphan, having a learning disorder or organic brain disorder, current use of psychotropic medication, engagement in ongoing psychotherapy, or absence during the recruitment period. Non-orphans were excluded because the project's funding was specifically allocated for interventions targeting the well-being of orphaned adolescents. Participants aged 13–17 years were recruited to guarantee adequate cognitive and linguistic competence for participation in cognitive-behavioral therapy (CBT) (Halder & Mahato, 2019). While factors such as parental loss and resilience are known to influence emotional distress, practical constraints limited the comprehensive assessment of these variables.

Figure 1 presents the CONSORT flow diagram. Initially, 17 Malay-operated, non- governmental run sheltered homes (N = 632 adolescents) were randomised, resulting in four homes (n = 71) being assigned to the intervention group and five homes (n = 68) to the waitlist control group. Of the 632 potential participants, only 243 adolescents from the nine consenting homes were eligible for further screening. Among these, 139 orphaned adolescents met the inclusion criteria and were retained in the final sample, with 71 allocated to the intervention group and 68 to the waitlist control group. The slight imbalance in group sizes resulted from the cluster-level randomisation procedure, whereby all adolescents within each randomised home were assigned to the same study arm.

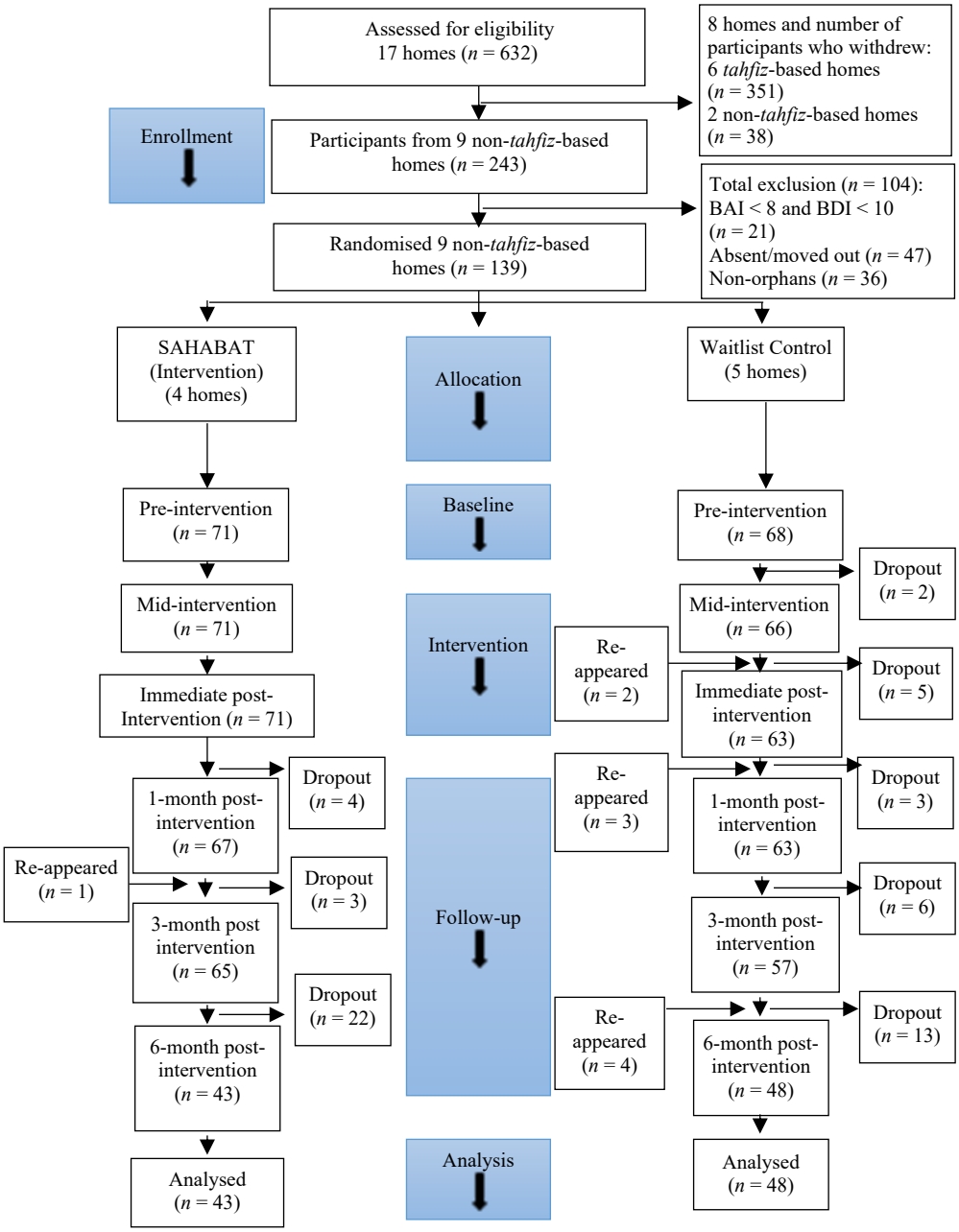

Figure 1. CONSORT Flow Chart

Following completion of the RCT, the SAHABAT programme and its accompanying materials were offered to participants in the waitlist control group;

however, attrition prevented some individuals from participating in the post-trial intervention. Subsequently, the intervention was also disseminated to non-orphaned adolescents residing in non–Malay- operated sheltered homes.

Intervention

The SAHABAT manual, developed in Malay, consists of eight structured core sessions: Session 1 focused on ice-breaking activities, personal perceptions, and self- evaluation; Session 2 introduces relaxation strategies, self-esteem building, and anger management; Session 3 addresses the recognition of physiological symptoms, cognitive distortions, emotions, and behaviours; Session 4 emphasises strategies for modifying cognitive distortions to facilitate emotional and behavioural change; Session 5 covers problem-solving skills; Session 6 guides participants in identify their support system; Session 7 focuses on cultivating inner peace through positive self-talk; and Session 8 involves a review and consolidation of learning, culminating in a celebration of participants' progress.

Measures

The BDI-Malay (Beck et al., 1961; Mukhtar & Oei, 2008) and the BAI-Malay (Beck et al., 1988; Mukhtar et al., 2011) both demonstrated strong construct validity and high internal consistency in Malay samples ($\alpha = .90$). The Automatic Thoughts Questionnaire (ATQ-Malay) (Hollon & Kendall, 1980; Oei & Mukhtar, 2008) showed good factorial validity with Cronbach's alphas ranging from .83 to .93. The Beck Youth Inventories–Anger Scale (BANI-Y Malay) (Beck et al., 2005; Ding et al., 2021) demonstrated excellent reliability ($\alpha = .92$) and convergent validity. The Rosenberg Self-Esteem Scale (RSES-Malay) (Rosenberg, 1965; Mohd Jamil, 2006) also showed acceptable psychometric properties in Malay adolescents, with alphas around .80.

Data Collection

At each measurement interval of pre-intervention (T1), mid-intervention (T2), immediate post-intervention (T3), 1-month follow-up (T4), 3-month follow-up (T5), and 6- month follow-up (T6), participants completed a battery of validated Malay-language versions of standardised questionnaires. The waitlist control group did not receive the intervention across the six measurement points.

Data Analyses

Data analyses comprised descriptive statistics, independent samples t-tests, and assumption testing for normality. A generalized linear mixed model (GLMM) was subsequently implemented in SPSS to enhance the robustness of the inferential

analyses by accounting for inter-individual variability nested within sheltered homes. The GLMM examined the effects of the SAHABAT programme, relative to the waitlist control condition, on depression, anxiety, negative automatic thoughts, self-esteem, and anger across the six measurement points. Sociodemographic covariates, baseline scores, intervention group, time, and the group x time interaction term were included as fixed effects, whereas sheltered homes were modelled as random effects to account for cluster-level dependency. Model fit was evaluated using Akaike's Information Criterion (AIC), and Bonferroni-adjusted significance thresholds were applied ($p \leq .05$). Effect sizes were calculated using eta-squared (η^2).

Results

Table 1 presents the sociodemographic characteristics of the orphaned adolescents in the RCT. Nearly all participants were Malay (99.9%) and all identified as Muslim (100%). The mean age of the sample was 14.81 years (*SD* = 1.36). Younger adolescents (13–15 years) constituted 67.6% (*n* = 94), while older adolescents (16–17 years) comprised 32.4% (*n* = 45). The sample included 63 males (45.3%) and 76 females (54.7%). A majority of participants were single orphans 91.4% (*n* = 127), with 8.6% (*n* = 12) identified as double orphans. Additionally, 54% (*n* = 75) reported having previously attended school-based counselling, whereas 46% (*n* = 64) had never engaged in counselling services.

A comparison between the SAHABAT intervention group and the waitlist control group at pre-intervention (T1) indicated no significant differences in age category, gender, or orphan status. Religious affiliation, ethnicity, and type of education were not statistically analysed due to near-homogeneity of the sample, as almost all participants were Malay Muslims enrolled in public schools. Although a significant difference emerged in prior counselling attendance, most adolescents had participated only once or twice, with fewer than three sessions reported overall.

Table 1. Sociodemographic characteristics of orphaned adolescents at pre-intervention for SAHABAT and waitlist control (n = 139)

Socio-demographic characteristics	Total		SAHABAT (*n* = 71)		Waitlist (*n* = 68)		Total	Statitical test	*p*
	n	*%*	*n*	*%*	*n*	*%*	*N*		
Age (Mean = 14.81, *SD* = 1.37)									
Age group (years)									
13–15	94	67.6	44	46.8	50	53.2	94	$\chi^2 = 1.62$	.20
16–17	45	32.4	27	60.0	18	40.0	45		
Gender									
Male	76	54.7	43	56.6	33	43.4	76	$\chi^2 = 1.57$	.21

Socio-demographic characteristics	Total		SAHABAT (n = 71)		Waitlist (n = 68)		Total	Statitical test	p
	n	*%*	*n*	*%*	*n*	*%*	*N*		
Female	63	45.3	28	44.4	35	55.6	63		
Type of orphan									
Single	127	91.4	66	52.0	61	48.0	127	χ^2 = .15	.70
Double	12	8.6	5	41.7	7	58.3	12		
HoCA									
Attended	75	54.0	45	60.0	30	40.0	75	χ^2 = 4.44	.04*
Never attended	64	46.0	26	40.6	38	59.4	64		

Note: Significant at *p < .05 (2-tailed); HOCA = History of counselling attendance

Table 2 presents baseline comparisons between the SAHABAT intervention and waitlist control groups. Independent samples t-tests indicated no significant differences in pre-intervention (T1) scores for depression (t = -.15, p = .88), anxiety (t = 1.90, p = .06), negative automatic thoughts (t = 1.88, p = .06), self-esteem (t = .78, p = .44), or anger (t = 1.91, p = .06), confirming equivalence between groups prior to the intervention.

Table 2. Depression, anxiety, negative automatic thoughts, self-esteem, and anger of orphaned adolescents at pre-intervention for SAHABAT and waitlist control (n = 139)

Measure	SAHABAT Mean (*SD*) n = 71	Waitlist Mean (*SD*) n = 68	Statistical test	p
BDI-Malay	17.73 (9.90)	17.97 (8.92)	t (137) = –.15	.88
BAI-Malay	23.44 (10.62)	20.16 (9.66)	t (137) = 1.90	.06
ATQ-Malay	39.28 (10.22)	35.68 (10.26)	t (137) = 1.88	.06
RSES-Malay	31.86 (3.71)	31.37 (3.72)	t (137) = .78	.44
BANI-Y Malay	22.65 (9.24)	19.29 (11.43)	t (137) = 1.91	.06

Note: Significant at *p < .05 (2-tailed).

Table 3 presents the mean depression scores and standard errors for the SAHABAT and waitlist control groups across six measurement points.

Table 3. Means and standard errors of depression, anxiety, negative automatic thoughts, anger, and self-esteem for SAHABAT and waitlist control across time (n = 139)

Time	Group	Mean	*SE*	95% CI	
				LL	UL
BDI-Malay					
T1 Pre-intervention	SAHABAT	18.40	1.54	15.38	21.42
	Waitlist control	18.91	1.64	15.70	22.13
T2 Mid-intervention	SAHABAT	13.24	1.54	10.22	16.26
	Waitlist control	17.03	1.64	13.80	20.25
T3 Post-intervention	SAHABAT	8.60	1.54	5.58	11.62

Time	Group	Mean	*SE*	95% CI	
				LL	UL
	Waitlist control	16.35	1.65	13.11	19.60
T4 1-month post-intervention	SAHABAT	9.78	1.55	6.74	12.81
	Waitlist control	15.37	1.66	12.11	18.63
T5 3-month post-intervention	SAHABAT	6.56	1.55	3.51	9.61
	Waitlist control	14.43	1.69	11.11	17.74
T6 6-month post-intervention	SAHABAT	6.56	1.67	3.28	9.83
	Waitlist control	14.79	1.71	11.43	18.15
BAI-Malay					
T1 Pre-intervention	SAHABAT	23.73	1.56	20.67	26.79
	Waitlist control	21.83	1.51	18.87	24.79
T2 Mid-intervention	SAHABAT	18.45	1.56	15.39	21.50
	Waitlist control	22.45	1.52	19.47	25.43
T3 Post-intervention	SAHABAT	14.50	1.56	11.44	17.56
	Waitlist control	21.09	1.54	18.07	24.11
T4 1-month post-intervention	SAHABAT	14.72	1.57	11.64	17.81
	Waitlist control	20.80	1.55	17.76	23.54
T5 3-month post-intervention	SAHABAT	10.80	1.58	7.69	13.90
	Waitlist control	19.72	1.59	16.59	22.85
T6 6-month post-intervention	SAHABAT	12.28	1.78	8.79	15.78
	Waitlist control	20.30	1.65	17.07	23.54
ATQ-Malay					
T1 Pre-intervention	SAHABAT	40.25	4.91	30.61	49.88
	Waitlist control	36.39	3.96	28.61	44.16
T2 Mid-intervention	SAHABAT	33.28	4.91	23.64	42.91
	Waitlist control	36.19	3.96	28.41	43.97
T3 Post-intervention	SAHABAT	30.15	4.91	20.51	39.79
	Waitlist control	36.01	3.97	28.22	43.81
T4 1-month post-intervention	SAHABAT	30.82	4.91	21.18	40.47
	Waitlist control	36.87	3.98	29.06	44.69
T5 3-month post-intervention	SAHABAT	30.82	4.91	21.18	40.47
	Waitlist control	36.87	3.98	29.06	44.69
T6 6-month post-intervention	SAHABAT	28.77	4.97	19.02	38.53
	Waitlist control	34.93	4.01	27.07	42.80
BANI-Y Malay					
T1 Pre-intervention	SAHABAT	21.44	2.26	17.01	25.87
	Waitlist control	20.86	1.42	18.08	23.64
T2 Mid-intervention	SAHABAT	15.24	2.26	10.81	19.67
	Waitlist control	20.44	1.43	17.63	23.25
T3 Post-intervention	SAHABAT	13.02	2.26	8.58	17.45
	Waitlist control	20.25	1.44	17.42	23.08
T4 1-month post-intervention	SAHABAT	12.67	2.26	8.23	17.12
	Waitlist control	21.47	1.46	18.61	24.33
T5 3-month post-intervention	SAHABAT	10.14	2.27	5.69	14.60

Time	Group	Mean	*SE*	95% CI	
				LL	UL
	Waitlist control	21.69	1.49	18.76	24.62
T6 6-month post-intervention	SAHABAT	10.11	2.36	5.48	14.75
	Waitlist control	20.09	1.53	17.08	23.09
RSES-Malay					
T1 Pre-intervention	SAHABAT	32.02	.64	30.77	33.27
	Waitlist control	31.70	.82	30.09	33.31
T2 Mid-intervention	SAHABAT	34.10	.64	32.86	35.35
	Waitlist control	31.87	.82	30.25	33.49
T3 Post-intervention	SAHABAT	34.67	.64	33.42	35.91
	Waitlist control	32.30	.83	30.66	33.93
T4 1-month post-intervention	SAHABAT	34.59	.64	33.32	35.85
	Waitlist control	31.91	.83	30.27	33.54
T5 3-month post-intervention	SAHABAT	36.23	.65	34.95	37.51
	Waitlist control	32.25	.85	30.58	33.92
T6 6-month post-intervention	SAHABAT	36.55	.75	35.09	38.01
	Waitlist control	32.91	.88	31.19	34.63

The results of the generalized linear mixed model (GLMM) analyses, presented in Table 4, indicate that the SAHABAT programme produced significant improvements across multiple psychological outcomes. A significant group × time interaction was observed for depression [$F(5, 729) = 6.53$, $p < .001$, $\eta^2 = .05$; small effect], anxiety [$F(5, 723) = 7.64$, $p < .001$, $\eta^2 = .05$; small effect], negative automatic thoughts [$F(5, 734) = 6.89$, $p < .001$, $\eta^2 = .05$; small effect], and anger [$F(5, 728) = 10.66$, $p < .001$, $\eta^2 = .07$; moderate effect]. These results indicate that the SAHABAT group demonstrated significantly greater reductions in these outcomes over time (T1–T6) compared to the waitlist control group.

Between-subject analyses further confirmed significant group differences for depression [($F(1, 729) = 8.48$, $p < .001$, $\eta^2 = .13$; moderate effect], anxiety [$F(1, 723) = 9.77$, $p < .001$, $\eta^2 = .07$; moderate effect], negative automatic thought [$F(1, 734) = .34$, $p < .001$, $\eta^2 = .00$, small effect], and anger [$F(1, 728) = 9.27$, $p < .01$, $\eta^2 = .06$; moderate effect]. These findings highlight the efficacy of the SAHABAT programme relative to the control.

Within-subject analyses revealed significant reductions over time (T1-T6) in depression [$F(5,729) = 27.12$, $p < .001$, $\eta^2 = .17$, large effect], anxiety [$F(5, 723) = 15.02$, $p < .001$, $\eta^2 = .10$; moderate effect], negative automatic thoughts [$F(5, 734) = 7.88$, $p < .001$, $\eta^2 = .05$, small effect], and anger [$F(5, 728) = 9.93$, $p < .001$, $\eta^2 = .07$; moderate effect].

For self-esteem, a significant but small group × time interaction was observed ($F(5, 730) = 3.30$, $p < .001$, $\eta^2 = .02$), indicating that the SAHABAT programme significantly led to greater improvements over time compared to the waitlist control in enhancing self-esteem. Between-subject analyses demonstrated a

moderate effect [$F(1, 730) = 10.65$, $p < .001$, $\eta^2 = .07$], while within-subject analyses showed a small but significant effect of time [$F(5, 730) = 7.41$, $p < .001$, $\eta^2 = .05$]. Notably, only participants in the SAHABAT group exhibited a significant increase in self-esteem over time (T1-T6).

Table 4. Effectiveness of the SAHABAT and waitlist control on depression across time ($n = 139$)

	Grand mean	*SE*	95% CI		*F*	df_1	df_2	*p*	η^2
			LL	UL					
BDI-Malay									
Fixed effect model	13.00	.45	12.12	13.86	47.63	20	729	$p < .001$**	.26
Random effect model	13.33	1.03	11.31	15.36	42.08	20	729	$p < .001$**	.23
Group					8.48	1	729	$p < .01$*	.13
Time					27.12	5	729	$p < .001$**	.17
Group × Time					6.53	5	729	$p < .001$**	.05
BAI-Malay									
Fixed effect model	17.92	.55	16.85	19.00	30.12	20	723	$p < .001$*	.18
Random effect model	18.39	0.94	16.53	20.24	26.15	20	723	$p < .001$*	.16
Group					9.77	1	723	$p < .001$*	.07
Time					15.02	5	723	$p < .001$*	.10
Group x Time					7.64	5	723	$p < .001$*	.05
ATQ-Malay									
Fixed effect model	33.40	.59	32.24	34.56	23.57	20	734	$p < .001$*	.15
Random effect model	34.28	3.10	28.19	40.37	21.94	20	734	$p < .001$*	.13
Group					.34	1	734	$p < .001$*	.00
Time					7.88	5	734	$p < .001$*	.05
Group x Time					6.89	5	734	$p < .001$*	.05
BANI-Y Malay									
Fixed effect model	17.91	.50	16.93	18.90	23.87	20	728	$p < .001$**	.15
Random effect model	17.28	1.25	14.84	19.73	19.87	20	728	$p < .001$**	.13
Group					9.27	1	728	$p < .01$*	.06
Time					9.93	5	728	$p < .001$**	.07
Group x Time					10.66	5	728	$p < .001$**	.07
RSES-Malay									
Fixed effect model	33.54	.27	33.02	34.07	16.97	20	730	$p < .001$**	.11

	Grand mean	*SE*	95% CI		*F*	df_1	df_2	*p*	η^2
			LL	UL					
Random effect model	33.42	.45	32.55	34.30	12.93	20	730	$p < .001$**	.09
Group					10.65	1	730	$p < .01$*	.07
Time					7.41	5	730	$p < .001$**	.05
Group x Time					3.30	5	730	$p < .01$*	.02

Note: Significant at **$p < .001$ (2-tailed), *$p < .01$ (2-tailed).

Figures 2–5 depict the magnitude of symptom reduction within the SAHABAT group from pre-intervention to post-intervention. Mean depression scores decreased from the mild range (M = 18.40) to minimal levels (M = 6.56), while mean anxiety scores declined from moderate (M = 23.73) to mild levels (M = 12.28). Negative automatic thoughts were reduced from high (M = 40.25) to low (M = 28.77), and anger scores decreased from mildly elevated (M = 21.44, T-score = 54–57) to the average range (M = 10.11, T-score = 42–47).

Figure 6 illustrates a corresponding increase in self-esteem, with mean scores rising from M = 32.02 to M = 36.55, indicating a significant enhancement that SAHABAT programme in fostering positive self-worth.

Overall, these findings demonstrate that the SAHABAT programme effectively promotes psychological well-being by reducing depression, anxiety, negative automatic thoughts, and anger, while simultaneously enhancing self-esteem. The observed improvements further underscore the intervention's superiority over the waitlist control.

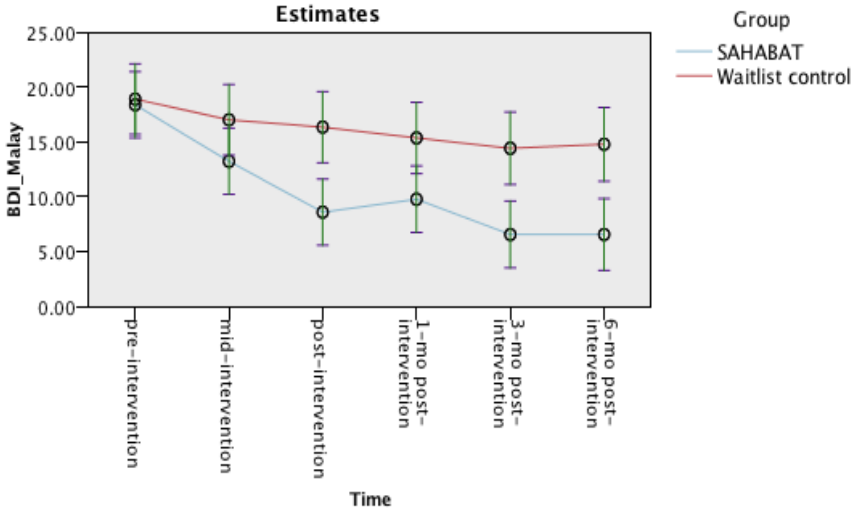

Figure 2. Group and time interaction effect of the SAHABAT and waitlist control on depression across time (n = 139)

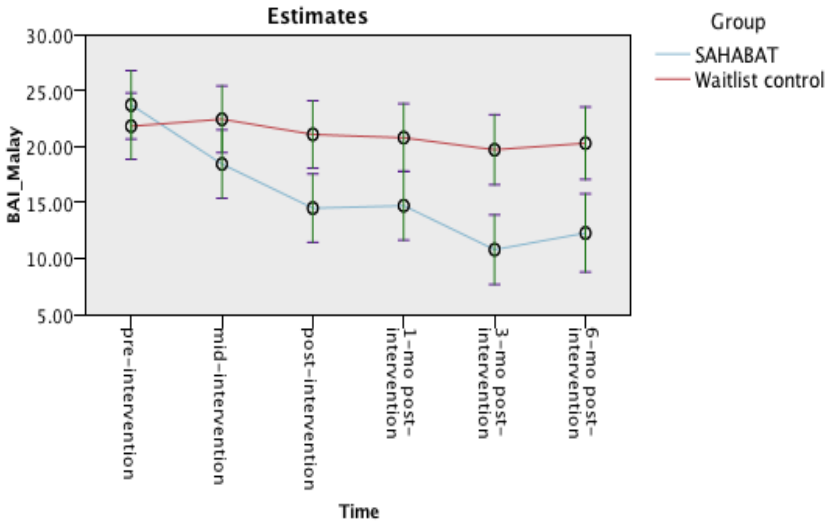

Figure 3. Group and time interaction effect of the SAHABAT and waitlist control on anxiety across time (n = 139)

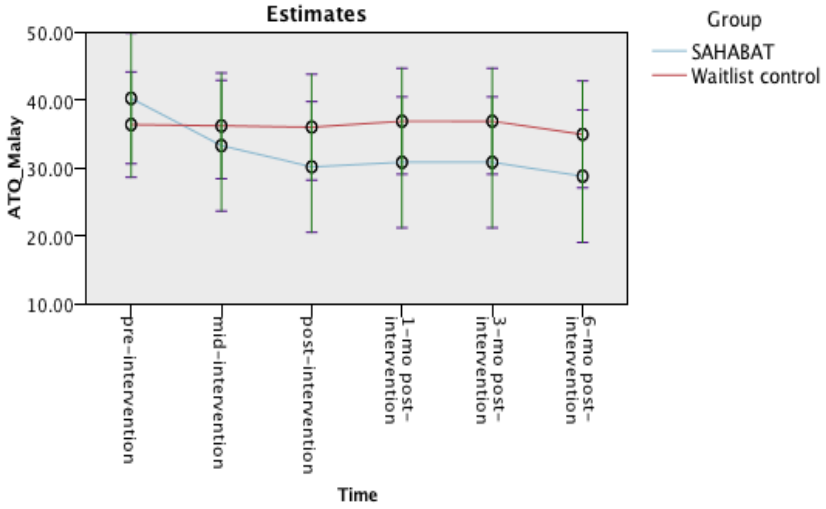

Figure 4. Group and time interaction effect of the SAHABAT and waitlist control on negative automatic thoughts across time (n=139)

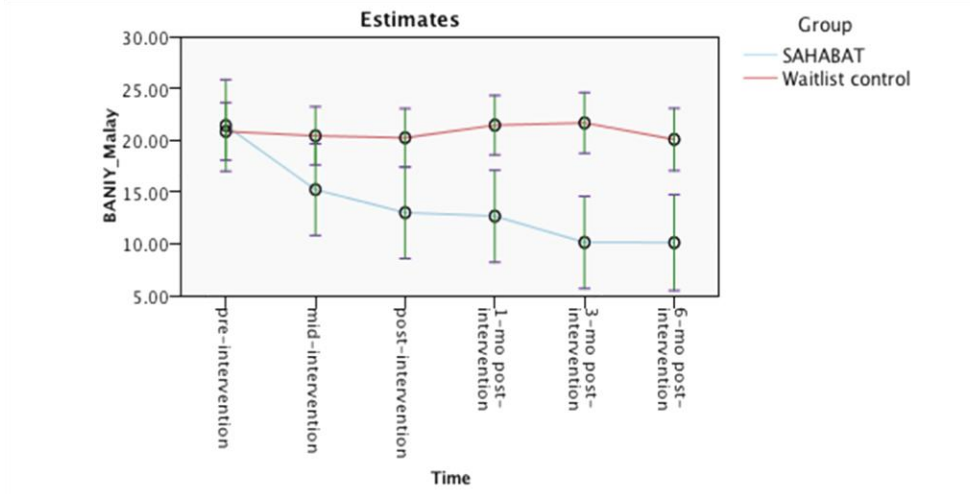

Figure 5. Group and time interaction effect of the SAHABAT and waitlist control on anger across time (n=139)

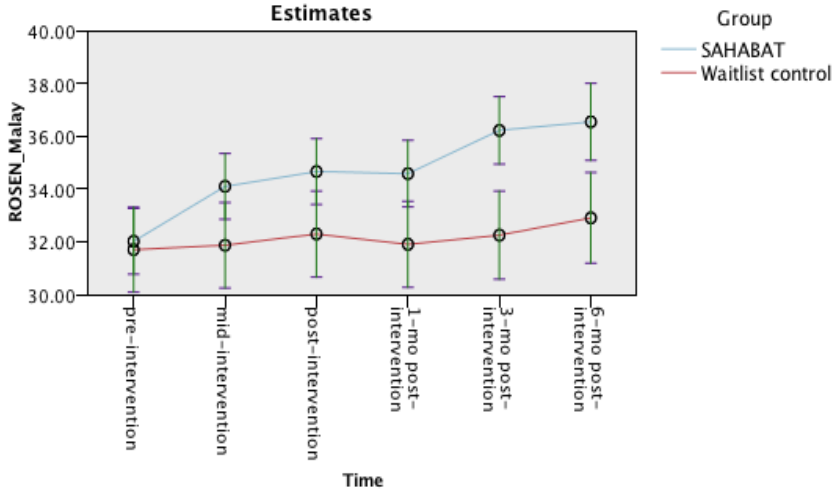

Figure 6. Group and time interaction effect of the SAHABAT and waitlist control on self-esteem across time (n=139)

Discussion

The SAHABAT programme demonstrated a lasting positive impact on the mental health of orphaned adolescents, with benefits sustained for at least six months post- intervention. Compared to the waitlist control, participants in the SAHABAT group exhibited significant reductions in depression, anxiety, and negative automatic thoughts, with small effect sizes, alongside moderate reductions in anger. Self-esteem also improved, albeit with a small effect size, underscoring the intervention's long-term effectiveness.

Consistent with prior research, Keles and Idsøe (2018) noted that while group-based CBT interventions initially yield strong post-intervention effects, these effects may diminish over time. In the present study, significant reductions in depression, anxiety, negative automatic thoughts, and anger, as well as increases in self-esteem, were observed immediately following the intervention (T3, 8th session). These improvements were likely initiated by cognitive restructuring during the mid-intervention phase (T2; 3rd–4th sessions), followed by behavioral strategies implemented between T2 and T3 (5th–6th sessions), which effectively managed symptoms. Reinforcement of cognitive components during the final sessions (T3; 7th–8th sessions) further strengthened the intervention's efficacy, echoing Tang et al.'s (2005) observation that substantial cognitive shifts typically precede symptom reductions after approximately four CBT sessions.

The small effect sizes observed in this study may be partially attributable to the adherence to stringent CONSORT-aligned research protocols and intention-to-treat analyses, which tend to yield conservative estimates of intervention effects (Keles & Idsøe, 2018). Other factors influencing reduced effect sizes include the absence of clinical populations treated with active comparison groups, participant attrition, and limited follow-up assessments (Keles & Idsøe, 2018; Zhou et al., 2015). Moreover, cross-cultural adaptation may play a role in moderating treatment efficacy, as CBT studies conducted outside North America often report smaller effect sizes (Weisz et al., 2006).

Compared to Saw et al. (2020), in which a CBT intervention for secondary school students produced moderate-to-large effect sizes for depression and negative automatic thoughts, the SAHABAT programme yielded smaller gains. This discrepancy may reflect the heightened psychological vulnerability of orphaned adolescents residing in sheltered homes. Nonetheless, the SAHABAT programme demonstrated transdiagnostic efficacy, effectively addressing primary concerns (depression and anxiety) and secondary outcomes (negative automatic thoughts, anger, and self-esteem), consistent with evidence supporting transdiagnostic CBT across diverse populations and formats (Cuijpers et al., 2023; Reinholt & Krogh, 2014; Riise et al., 2021; Zakaria et al., 2021).

RCTs consistently support CBT over passive controls in treating various child and adolescent mental health disorders, including depression and anxiety (Hamedi et al., 2020; Keles & Idsøe 2018; Zhou et al., 2015, Wergeland et al., 2021), as well as secondary targets such as negative automatic thoughts (Florean et al., 2024; Mirzaian et al., 2023; Saw et al., 2020; Topper et al., 2023; Elahabadi, 2025), self-esteem (Waite et al., 2012; Wergeland et al., 2021), and anger (Dejid, Delgerjav, & Tsogzolmaa, 2022).

The enduring benefits of SAHABAT align with evidence highlighting the role of booster sessions in consolidating CBT outcomes, especially comparing to passive controls (Gearing et al., 2013; Vittengl et al., 2019). While this study did not employ DSM-5 diagnostic criteria, participants were recruited based on symptom severity, reflecting the programme's dual function as both treatment and prevention. Small effect sizes in CBT-based prevention programs for depression and anxiety have been reported in prior studies (Rasing et al., 2017; Werner-Seidler et al., 2017).

At the 1-month post-intervention assessment in this study, participants exhibited fluctuations in scores, with increases in depression, anxiety, negative automatic thoughts, and anger, accompanied by a decline in self-esteem. These variations were likely due to participant absences during data collection, as many spent the year-end school holidays with relatives and returned to the sheltered homes only after school resumed, approximately six weeks later. Despite these short-term inconsistencies, subsequent assessments at 3 and 6 months post-intervention demonstrated steady decreases in depression, anxiety, and negative automatic thoughts, along with improvements in self-esteem, indicating the sustained effectiveness of the SAHABAT programme.

Cultural and familial factors may constrain the application of CBT to behavioral rather than cognitive domains (Halder & Mahato, 2019); nevertheless, the SAHABAT programme proved effective within the complex familial and Malay cultural context of orphaned adolescents. Notably, the short-term, 8-session intervention was sufficient to achieve meaningful improvements, consistent with prior reports of brief CBT (≤10 sessions) effectively treating depression, anxiety, negative automatic thoughts, low self-esteem, and anger (Beidas et al., 2013; Saw et al., 2020; Straub et al., 2014; Sukhodolsky et al., 2016; Waite et al., 2012). Despite challenges inherent to group CBT such as maintaining confidentiality, addressing diverse clinical needs, and logistical coordination, the intervention remains cost-effective and feasible within sheltered homes.

A major strength of this study is its strict adherence to CONSORT standards for quantitative research, which ensured methodological rigor, objectivity, and validity in assessing variables and causal relationships. The study design was carefully structured to address the research questions while minimizing extraneous influences, thereby enabling valid generalizations. The Malay versions of the questionnaires demonstrated strong reliability and validity, supporting the robustness of the measurements. Multi-stage cluster random sampling was employed

to select sheltered homes and allocate participants into the intervention and waitlist control groups, with clearly defined inclusion and exclusion criteria. Additionally, the use of Accuracy in Parameter Estimation (AIPE) enhanced the precision of population estimates, and generalized linear mixed models (GLMM) accounted for variability across homes. The study was conducted in a naturalistic setting, with the SAHABAT programme delivered within participants' sheltered homes, thereby enhancing ecological validity within the RCT framework. Finally, the intervention was delivered by trained clinical psychologists, ensuring fidelity and credibility. Collectively, these methodological strengths provide robust evidence regarding the effectiveness of CBT in alleviating emotional distress among orphaned adolescents in Malaysia.

This study has several limitations. The generalizability of the findings is constrained, as the sample was drawn exclusively from a single state in Malaysia due to logistical and financial constraints. Additionally, the study focused solely on registered non-governmental sheltered homes, excluding unregistered facilities, which may limit the representativeness of the findings for the broader population of sheltered homes in Selangor. Another notable limitation is the absence of active comparison groups. While some studies report that CBT is more effective than active controls (James et al., 2015), others suggest that the inclusion of active control conditions can inflate the perceived efficacy of psychotherapies (Zhou et al., 2015). Although CBT has consistently demonstrated effectiveness in reducing depression and anxiety relative to waitlist controls, its superiority over other psychotherapeutic approaches remains inconclusive (Tolin, 2010). Despite careful sample size calculation, a larger sample would have increased the statistical power and robustness of the analyses. Finally, the follow- up period was limited to six months post-intervention, which may be insufficient to evaluate long-term outcomes, and attrition further constrained the ability to conduct extended follow- up assessments.

Conclusion

The SAHABAT programme represents a culturally adapted, evidence-based CBT intervention that effectively reduces emotional distress and enhances psychological well- being among orphaned adolescents. Its transdiagnostic properties, feasibility, and sustained effects highlight its potential as both a preventive and therapeutic intervention within sheltered home contexts in Malaysia. To the best of the authors' knowledge, this study constitutes the first RCT evaluating group CBT for adolescents with anxiety, low self-esteem, and anger in Malaysia, and the second for adolescent depression. The findings align with existing literature, address theoretical and research gaps, and support the biopsychosocial model and the applicability of CBT in Malaysian populations.

The eight-session SAHABAT programme demonstrated sustained improvements in depression, anxiety, negative automatic thoughts, self-esteem, and anger for at least six months post-intervention. Its user-friendly and cost-effective format, alongside its superiority over waitlist control, underscores its potential for wider implementation in schools and community settings, provided challenges such as the cost of training the therapists, therapist fees, logistical coordination, and participant engagement are addressed.

School counsellors and mental health agencies are encouraged to consider integrating SAHABAT into community-based programmes. Additionally, given the prevalence of mental health issues in non-government-run sheltered homes and the shortage of mental health professionals in Malaysia, urgent measures are needed to expand government-run facilities, enhance support for non-governmental homes, and strengthen foster care systems. The present study contributes to the growing literature on transdiagnostic CBT for underprivileged adolescents in institutional care and provides valuable insights into the mental health of orphaned adolescents in Malay-operated, non-governmental shelters.

Future research should focus on establishing clinical thresholds for mental health assessments among participants to enhance diagnostic accuracy, ideally combining structured diagnostic interviews with validated self-report measures. High-quality RCTs comparing CBT with pharmacological treatments and other psychotherapeutic approaches, including booster sessions, are warranted. Studies with larger sample sizes, extended follow-up periods, and diverse populations such as non-Malay sheltered homes, and diverse settings including schools and community centres, will improve the generalizability of findings. Additionally, comparative studies examining manually delivered CBT versus online CBT, as well as third- wave CBT approaches such as mindfulness-based interventions, are recommended, given the growing evidence supporting online CBT for alleviating depression and anxiety among adolescents.

Collectively, the findings of this study underscore the promise of the SAHABAT programme as a scalable, culturally relevant intervention to promote psychological well-being and resilience among orphaned adolescents in Malaysia.

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We have no known conflict of interest to disclose.

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