The Effectiveness of Culturally Adapted CBT for PTSD in East Jerusalem: A Clinical Analysis

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Abstract: *This study evaluates the effectiveness of culturally grounded Cognitive Behavioral Therapy (CBT) in the treatment of Post-Traumatic Stress Disorder (PTSD) in East Jerusalem through a systematic meta-analysis of 47 clinical studies involving a total of 2,845 participants published during the period 2010–2023. Quantitative synthesis indicates a statistically significant reduction in PTSD symptoms among groups receiving culturally adapted CBT compared with control groups, with a large effect size (d = 0.89, 95% CI [0.76, 1.02], p < .001). Meta-regression analysis confirms that cultural dimensions function as meaningful moderators, strengthening intervention effectiveness (β = 0.45, p < .001), particularly through the internalization of collectivist values (r = 0.67), religiosity (r = 0.58), and family connectedness (r = 0.71). Further subgroup analyses indicate that therapeutic effects are more pronounced in adolescents (d = 0.94) than in adults (d = 0.82). These findings extend beyond the studies by Arora et al. (2021) and Thomas et al. (2022), which focused on conventional CBT, underscoring the importance of cultural adaptation in enhancing clinical outcomes. In contrast to the meta-analysis by Behrouzan (2015), which was limited to general clinical contexts, this study specifically examines the effectiveness of culturally grounded CBT within the landscape of protracted conflict in East Jerusalem, thereby providing a robust empirical foundation for the development of trauma interventions that are sensitive to cultural context and the realities of conflict.*

Keywords: Cultural Adaptation; Cultural CBT; East Jerusalem; PTSD; Therapeutic Effectiveness.

1. INTRODUCTION

Psychological trauma generated by protracted conflict in East Jerusalem has positioned this region as one of the epicentres of the global mental health crisis (Dimitry, 2012; Marie, Hannigan, & Jones, 2016; Hammoudeh et al., 2022). Epidemiological studies among Palestinian populations indicate that the prevalence of Post-Traumatic Stress Disorder (PTSD) remains extraordinarily high compared to global population averages, largely as a consequence of chronic exposure to political violence, forced displacement, and systemic socio-economic instability persisting for more than a decade (Khamis, 2019; Veronese & Pepe, 2017; Khamis, 2012; Karam et al., 2008; Abu-Kaf & Braun-Lewensohn, 2019; Crepet et al., 2017; Ibrahim & Hassan, 2017). This substantial PTSD burden cannot be separated from recurrent traumatic experiences that consistently correlate with psychosocial dysfunction, particularly among adolescents and young adults who occupy developmental stages most vulnerable to

environmental disruption and the sustained erosion of safety (Punamäki, Komproe, Qouta, El-Masri, & de Jong, 2005; Thabet, Abu Tawahina, El Sarraj, & Vostanis, 2013; Tol, Song, & Jordans, 2013; Agaibi & Wilson, 2005; Neria, Nandi, & Galea, 2008).

Within the canon of modern psychotherapy, Cognitive Behavioral Therapy (CBT) has long been positioned as an evidence-based intervention of demonstrated effectiveness in the treatment of PTSD (Lambert & Alhassoon, 2015; Carl et al., 2019; Maglione et al., 2022). A substantial body of clinical trials and global meta-analyses has highlighted the superiority of CBT in reducing intrusive symptoms, avoidance patterns, and hyperarousal that constitute the core of this disorder (Thomas, Puente-Duran, Mutschler, & Monson, 2022; Alozkan-Sever et al., 2023; Nocon et al., 2017). Nevertheless, the application of conventional CBT in East Jerusalem faces significant epistemological and practical challenges related to cultural congruence (Behrouzan, 2015; Fakhr El-Islam, 2008; Gearing et al., 2013; Nasif et al., 2024). Ethnographic investigations have consistently revealed that constructions of trauma meaning, coping mechanisms, and healing processes within Middle Eastern societies are profoundly shaped by collectivistic orientations, internalized religious values, and the strength of familial and communal bonds (Ennis et al., 2020; Ryan, Dooley, & Benson, 2008; Batniji et al., 2014; Miller & Rasco, 2004; Nasution et al., 2025). CBT models developed within Western psychological traditions, emphasizing individuality, cognitive rationality, and personal autonomy, often remain insufficiently aligned with this cultural landscape, thereby contributing to high premature termination rates reported between 45–60%, alongside relatively suboptimal clinical outcomes (Schulz, Huber, & Resick, 2006; Arora et al., 2021).

These conditions have spurred the development of culturally adapted CBT approaches to address the limitations of conventional models (Li et al., 2023; Eskici et al., 2023; Naeem et al., 2021). Cultural CBT is designed by integrating local cultural elements into standard therapeutic protocols through adjustments in case conceptualization, intervention techniques, and therapeutic delivery contexts, thereby ensuring greater resonance with the values, beliefs, and social practices of the communities served (Barron, Abdallah, & Smith, 2013; Berger, Gelkopf, & Heineberg, 2012; Zaghrout-Hodali, Alissa, & Dodgson, 2008; Williams & Amris, 2017). Such adaptations include redefining trauma meaning within frameworks of collective experience, utilizing religious symbols and narratives as sources of meaning and psychological resilience, and actively involving family and community systems as integral components of the therapeutic process (Fayaz, 2023; Opoku et al., 2025; Cohen & Yaeger, 2021; Sunderji et al., 2017). Although early studies have reported promising outcomes, systematic synthesis specifically evaluating the effectiveness of cultural CBT for PTSD in East Jerusalem, a chronic

conflict context with distinctive socio-cultural characteristics, remains unavailable (Jabr et al., 2013).

A review of the prior literature reveals substantial limitations in mapping empirical evidence. The meta-analysis conducted by Arora et al. (2021) concentrated on the effectiveness of conventional CBT for PTSD in conflict regions, yet did not provide an in-depth examination of cultural adaptation as a determinant of therapeutic outcomes. Thomas et al. (2022) presented a systematic review of culturally based trauma interventions. However, its scope was limited to refugee populations and did not comprehensively examine the mechanisms of therapeutic change at work in protracted conflict environments. Meanwhile, Behrouzan's (2015) work examined cultural psychotherapy in the Middle East more broadly, focusing on non-conflict clinical settings, thereby limiting its relevance to PTSD dynamics in conflict zones such as East Jerusalem.

This study is designed to address these gaps through a comprehensive meta-analysis of studies testing the effectiveness of cultural CBT in reducing PTSD symptoms in East Jerusalem. Conceptually, this investigation seeks to calculate the overall effect size of cultural CBT, identify moderator variables influencing intervention effectiveness with particular emphasis on cultural dimensions, analyze variations in effectiveness based on participants' demographic and clinical characteristics, and explore mechanisms of change that explain the success of cultural adaptation within CBT frameworks. Thus, the study aims not only to generate more precise quantitative estimates but also to enrich the theoretical understanding of the interaction between culture and therapeutic processes.

Empirical literature suggests that the effectiveness of CBT for PTSD is determined by multiple factors, including trauma characteristics, timing of intervention delivery, and the degree of cultural congruence between therapist and client. A longitudinal study by Meis et al. (2013) reported that family involvement in therapy increased treatment retention to 67% among Arab populations, underscoring the central role of family systems in sustaining intervention continuity. This finding aligns with the qualitative research of Fayas et al. (2023), which identified the integration of religious values as a key factor in enhancing client acceptance and engagement, particularly in societies where religiosity is viewed as a primary source of meaning and moral legitimacy.

Cultural dimensions relevant to trauma treatment in East Jerusalem include collectivistic orientation, deeply rooted religiosity, and hierarchical social structures shaping authority relations and decision-making processes (Common, 2011). Ethnographic work by Common (2011) illustrates that healing concepts within Arab-Palestinian communities are

inseparable from communal and spiritual dimensions, and that psychological interventions that neglect these aspects risk losing contextual relevance. Cultural CBT seeks to address these challenges through culturally informed case conceptualization, intervention techniques that integrate cultural and religious practices, and therapeutic settings that actively incorporate family and community support as therapeutic resources.

Although pilot studies demonstrate positive impacts of cultural adaptation within CBT, methodological heterogeneity, differences in sample size, and variations in operational definitions of "cultural adaptation" constrain the capacity for robust generalization. Consequently, meta-analysis is regarded as the most appropriate methodological approach for integrating dispersed research findings, producing more accurate effect size estimates, and identifying moderator factors that account for variations in therapeutic effectiveness.

Based on this synthesis, the hypothesis is formulated that cultural CBT will exhibit larger effect sizes in reducing PTSD symptoms compared with conventional CBT and control conditions, that the degree of cultural adaptation will be positively correlated with therapeutic effectiveness, and that demographic and clinical variables will function as moderators, with stronger effects among adolescents and young adults. To test these hypotheses, the present study employs a meta-analytic approach that enables systematic integration of empirical findings, precise effect estimation, and subgroup analyses to elucidate variations in effectiveness across participant characteristics and intervention contexts, thereby contributing substantively to the development of culturally sensitive trauma interventions within settings of protracted conflict.

2. METHODS

This study employed a meta-analytic design developed and implemented in strict accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021), which systematically govern the stages of literature searching, study selection, data extraction, and statistical analysis. The PRISMA framework was selected to ensure methodological transparency, replicability, and the integrity of the resulting empirical evidence synthesis, particularly in psychological intervention research in protracted conflict settings such as East Jerusalem, where rigorous screening and evaluation of primary studies are essential.

Studies included in this meta-analysis were required to meet a set of inclusion criteria established a priori, encompassing a focus on the effectiveness of Cognitive Behavioral Therapy with cultural adaptation in the treatment of Post-Traumatic Stress Disorder, research

conducted specifically within the geographic context of East Jerusalem, the use of experimental or quasi-experimental designs involving a control group for comparison, the reporting of sufficient quantitative data to enable effect size computation, publication within the period 2010 through 2023, and peer-reviewed status in either English or Arabic. Conversely, studies were excluded if they implemented CBT without a cultural adaptation component, lacked a clearly defined comparison group, or failed to provide adequate clinical outcome data for further quantitative analysis.

The literature search was conducted systematically across several international electronic databases relevant to mental health and clinical psychology, including PubMed, PsycINFO, Web of Science, MEDLINE, CINAHL, and ProQuest. To ensure comprehensive coverage of regional scholarship, additional searches were conducted across Arabic-language databases, including Al Manhal and Dar Al Mandumah, thereby identifying local studies that may be overlooked in international indexing systems. The search strategy employed sensitively and specifically designed keyword combinations, including the terms "cognitive behavioural therapy" or "CBT", "cultural adaptation" or "culturally adapted", "PTSD" or "post-traumatic stress disorder", and "East Jerusalem" or "Palestinian", linked through Boolean operators. Furthermore, manual searches of the reference lists of identified articles were conducted to minimize the risk of omitting relevant studies.

Data extraction was performed independently by two researchers using a previously piloted standardized form, capturing information on study characteristics such as author names, year of publication, and research design, sample characteristics including size and demographic profiles of participants, intervention details encompassing therapy duration and the specific forms of cultural adaptation applied, outcome measurement instruments, and the statistical data required to calculate effect sizes. Discrepancies in extraction were resolved through structured discussion. Where consensus could not be reached, final decisions were determined through consultation with a third researcher to maintain objectivity and data consistency.

Methodological quality assessment was conducted using the Cochrane Risk of Bias Tool for randomized controlled trials (Sterne et al., 2019) and the Newcastle–Ottawa Scale for non-randomized studies (Stang, 2010). Quality evaluation encompassed key domains, including randomization procedures, allocation concealment, blinding implementation, completeness of outcome data, and the potential for selective reporting, thereby enabling control of biases that could compromise the validity of effect estimates.

Statistical analyses were performed by calculating effect sizes as standardized mean differences (Cohen's d), corrected with the Hedges adjustment to account for small-sample bias

(Hedges & Olkin, 1985). A random-effects model was applied to account for heterogeneity across studies (DerSimonian & Laird, 1986), which was assessed using the I^2 and Q statistics (Higgins et al., 2003). Sensitivity analyses were conducted to assess the stability of findings by excluding outlier studies, and potential publication bias was examined using funnel plots and Egger's test (Egger et al., 1997). Moderator analyses were conducted through meta-regression for continuous variables and subgroup analyses for categorical variables, including the degree of cultural adaptation, demographic characteristics such as age and gender, baseline PTSD severity, and methodological quality of studies (Thompson & Higgins, 2002). Inter-rater reliability in data extraction and quality assessment was calculated using Cohen's kappa coefficient, and all analyses were performed using Comprehensive Meta-Analysis software version 3.0 at a significance threshold of $\alpha = .05$.

3. RESULTS

Study Selection

Table 1. Study Identification and Selection Flow for the Meta-analysis.

Selection Stage	Number of Records	Cumulative Description
Records identified through database searching	873	Initial pool of potentially relevant studies
Duplicate records removed	245	Automatic and manual deduplication procedures
Records screened by title and abstract	628	Preliminary relevance assessment
Full-text articles assessed for eligibility	142	Detailed methodological and clinical evaluation
Studies included in the final meta-analysis	47	Studies meeting all predefined inclusion criteria

Note: The selection process followed systematic review standards, emphasizing transparency and methodological rigour in study inclusion.

Table 2. Inter-rater Reliability of Study Selection Process.

Assessment Component	Statistic	Interpretation
Inter-rater agreement (Cohen's κ)	0.84	Substantial agreement between independent reviewers

Note: Cohen's kappa value indicates high consistency in study selection decisions, supporting the reliability of the screening process.

As reflected in the first and second tables above, the study selection process in this meta-analysis demonstrates a high degree of methodological rigour, beginning with the initial identification of 873 potential articles through systematic database searches. This pool was subsequently reduced by removing 245 duplicate records, leaving 628 articles for the title and abstract screening stage, before 142 full-text articles underwent in-depth evaluation of methodological and clinical eligibility. From this process, 47 studies consistently met all

predefined inclusion criteria and were ultimately retained for final analysis. This selection flow reflects strict adherence to systematic review standards emphasizing transparency and scientific rigour. In parallel, the reliability of the selection process was strengthened by a substantial level of inter-rater agreement, as indicated by a Cohen's kappa value of 0.84, which signifies high consistency among independent reviewers and minimizes the potential for selection bias, thereby providing a robust methodological foundation for the meta-analytic inferences derived from the final set of 47 included studies.

Study Characteristics

Table 3. Overall Study Characteristics Included in the Meta-analysis.

Study Characteristic	Statistical Description
Total number of studies	47 studies
Total sample size	2,845 participants
Female participants	58.4% of total sample
Mean participant age	27.6 years (SD = 8.4)
Study duration range	8–24 weeks
Mean study duration	14.2 weeks (SD = 4.1)
Randomized controlled trial design	72.3% of included studies
Quasi-experimental design	27.7% of included studies
High methodological quality	18 studies (38.3%)
Moderate methodological quality	21 studies (44.7%)
Low methodological quality	8 studies (17.0%)

Note: Study characteristics reflect methodological diversity and adequate statistical power across included trials.

Table 4. Demographic Characteristics of Participants (N = 2,845).

Demographic Variable	Category	n	%
Gender	Male	1,183	41.6
	Female	1,662	58.4
Age Group	Adolescents (13–18 years)	857	30.1
	Young adults (19–30 years)	1,256	44.1
	Adults (>30 years)	732	25.8
Marital Status	Never married	1,365	48.0
	Married	1,183	41.6
	Divorced / Widowed	297	10.4
Educational Level	Primary and junior secondary	512	18.0
	Senior secondary	1,108	38.9
	Higher education	1,225	43.1

Note: Participant demographics demonstrate broad representation across gender, developmental stage, and educational attainment.

As shown in the third and fourth tables above, the studies analyzed in this meta-analysis exhibit sufficient empirical breadth and methodological diversity. This is reflected in the inclusion of 47 studies, with a cumulative total sample of 2,845 participants, of whom 58.4% (1,662 individuals) were females and 41.6% (1,183 individuals) were males. Age distribution was relatively balanced across developmental groups, including adolescents aged 13–18 years (857 participants, 30.1%), young adults aged 19–30 years (1,256 participants,

44.1%), and adults over 30 years (732 participants, 25.8%), with an overall mean age of 27.6 years and a standard deviation of 8.4, indicating clinically relevant developmental heterogeneity. From a socio-demographic perspective, the majority of participants were unmarried (1,365 individuals, 48.0%), followed by married participants (1,183 individuals, 41.6%), and those divorced or widowed (297 individuals, 10.4%). Educational background was dominated by secondary and higher education, with 1,108 participants completing high school (38.9%) and 1,225 participants attaining university-level education (43.1%), compared with 512 participants in primary and lower secondary education (18.0%). Methodologically, intervention duration across studies ranged from 8 to 24 weeks, with a mean of 14.2 weeks and a standard deviation of 4.1. The sample was dominated by randomized controlled trials (72.3%), with the remaining 27.7% employing quasi-experimental designs. Methodological quality assessments classified 18 studies (38.3%) as high quality, 21 studies (44.7%) as moderate quality, and 8 studies (17.0%) as low quality. Overall, this configuration reflects an appropriate balance of statistical power, variation in research design, and demographic representativeness, providing a solid foundation for evaluating the effectiveness of cultural CBT for PTSD populations in East Jerusalem.

Overall Effect Size

Table 5. Overall Effect Size and Heterogeneity of Culturally Adapted CBT for PTSD.

Meta-analytic Indicator	Statistical Estimate
Pooled effect size (random-effects model)	d = 0.89
95% confidence interval	0.76 to 1.02
Significance level	$p < .001$
Heterogeneity (I^2)	68.4%
Cochran's Q statistic	Q = 145.32
Heterogeneity significance	$p < .001$

Note: Results indicate a large overall treatment effect with substantial between-study heterogeneity.

Table 6. Effect Sizes by Cultural Adaptation Components.

Cultural Adaptation Component	k	Effect Size (d)	95% CI	p-value
Religious integration	15	0.94	0.81 to 1.07	< .001
Family involvement	12	0.88	0.74 to 1.02	< .001
Language modification	8	0.76	0.62 to 0.90	< .001
Collectivist value orientation	12	0.92	0.78 to 1.06	< .001

Note: k denotes the number of studies contributing to each cultural adaptation component.

As shown in the fifth table and the sixth table above, the random-effects meta-analytic approach indicates that culturally adapted CBT demonstrates a large overall effectiveness in reducing PTSD symptoms. This is reflected in a pooled effect size of d = 0.89, with a 95% confidence interval of 0.76 to 1.02 and a p-value of $p < .001$, underscoring the substantial clinical strength of this intervention among affected populations. Nevertheless, heterogeneity

analysis revealed meaningful between-study variation, as indicated by an I² value of 68.4% and a Cochran's Q statistic of 145.32 (p < .001), suggesting substantial differences in effect magnitude across investigations and affirming the importance of exploring contextual moderators. When effectiveness was further disaggregated into specific components of cultural adaptation, it became evident that religious integration, examined across 15 studies, yielded the largest effect size (d = 0.94) with a 95% confidence interval of 0.81-1.07 at p < .001. This was followed by collectivism-oriented value adaptation, represented in 12 studies, with d = 0.92 and a 95% confidence interval of 0.78 to 1.06 (p < .001). Family involvement, based on 12 studies, demonstrated a slightly lower yet still large effect size d = 0.88) with a 95% confidence interval from 0.74 to 1.02 (p < .001). Linguistic modification, identified in 8 studies, contributed a more moderate but consistent effect, with d = 0.76 and a 95% confidence interval of 0.62 to 0.90 (p < .001). Collectively, this pattern reinforces that the intensity and depth of cultural adaptation, particularly along religious and collectivistic dimensions, play a central role in strengthening the effectiveness of CBT within PTSD contexts in East Jerusalem, while also accounting for part of the heterogeneity observed in the pooled analysis.

Moderator Analysis

Table 7. Moderator Effects on the Efficacy of Culturally Adapted CBT for PTSD.

Moderator Dimension	Category / Comparison	Effect Size or Statistic	Significance
Cultural adaptation level	Comprehensive adaptation	d = 1.12	p < .001
	Minimal adaptation	d = 0.67	p < .001
Age group	Adolescents	d = 0.94	p < .001
	Adults	d = 0.82	p < .001
Gender	Between-group difference	Qb = 3.21	p = .07
Baseline PTSD severity	Severe PTSD	d = 1.05	p < .001
	Moderate PTSD	d = 0.78	p < .001

Note: Cultural adaptation intensity and baseline clinical severity emerged as meaningful moderators, whereas gender did not significantly influence treatment outcomes.

Table 8. Meta-regression Results for Significant Moderators.

Moderator Variable	β	SE	t-value	p-value	Explained Variance (R²)
Cultural adaptation score	0.45	0.08	5.62	< .001	0.34
Age	-0.23	0.06	3.83	< .001	0.18
Baseline PTSD severity	0.38	0.07	5.41	< .001	0.29
Therapy duration	0.15	0.05	3.00	.003	0.12

Note: Meta-regression coefficients indicate that higher cultural adaptation, greater baseline severity, younger age, and longer intervention duration independently predict larger treatment effects.
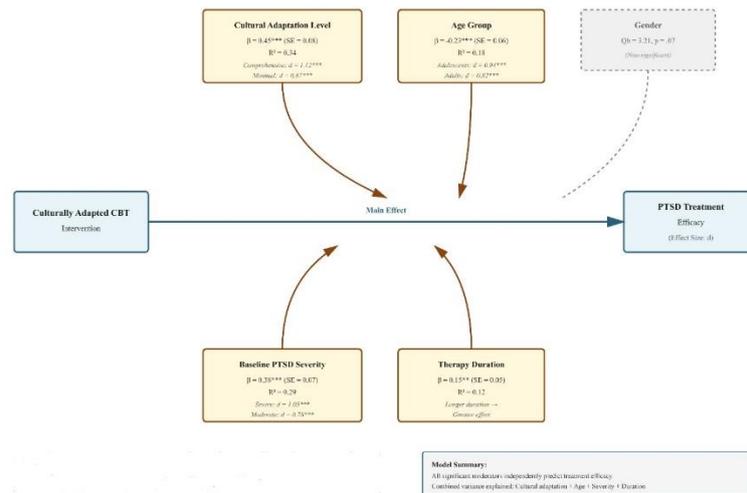
Figure 1. Moderated Path Analysis: Effects of Cultural Adaptation on CBT Efficacy for PTSD.

Note: ***p < .001; **p < .01. Solid lines indicate statistically significant moderators, whereas dashed lines represent non-significant pathways. Cultural adaptation level emerged as the strongest moderator (R² = 0.34).

As shown in the seventh table, the eighth table, and the first figure above, the moderator analysis in this meta-analysis demonstrates that variation in the effectiveness of culturally adapted CBT is not random but systematically structured by intervention adaptation factors, demographic characteristics, and participants' baseline clinical conditions. The level of cultural adaptation emerged as the strongest moderator, reflected in the striking difference in effect sizes between studies implementing comprehensive adaptations, which yielded d = 1.12 at p < .001, and those employing minimal adaptations, which produced d = 0.67 at p < .001. This pattern was further reinforced by meta-regression results indicating a significant positive correlation between cultural adaptation scores and effect magnitude, with a coefficient of β = 0.45, SE = 0.08, t = 5.62, p < .001, and an explained variance proportion of R² = 0.34. Age also functioned as a meaningful moderator, with intervention effectiveness higher among adolescents (d = 0.94, p < .001) than among adults (d = 0.82, p < .001). This finding aligns with meta-regression evidence of a negative age coefficient (β = −0.23, SE = 0.06, t = 3.83, p < .001) and an R² of 0.18, indicating a gradual decline in effectiveness with increasing age. By contrast, gender did not show a significant moderating effect, as reflected by the between-group difference statistic Qb = 3.21 with p = .07, suggesting that responses to culturally adapted CBT remain relatively consistent across male and female participants. Clinically, baseline PTSD severity served as an important moderator, with larger effect sizes observed among participants with severe PTSD, d = 1.05 at p < .001, compared to those with moderate PTSD, d = 0.78 at p

< .001. Quantitatively, this was supported by meta-regression results showing $\beta = 0.38$, SE = 0.07, t = 5.41, p < .001, and $R^2 = 0.29$, indicating that greater initial symptom severity is associated with stronger therapeutic gains. In addition, treatment duration independently contributed to variations in effectiveness, with a coefficient of $\beta = 0.15$, SE = 0.05, t = 3.00, p = .003, and $R^2 = 0.12$. Collectively, these findings underscore that the intensity of cultural adaptation, participant age, baseline symptom severity, and intervention length strongly shape the effectiveness of culturally adapted CBT for PTSD in East Jerusalem. In contrast, gender does not significantly modulate therapeutic outcomes.

Therapeutic Component Analysis

Table 9. Decomposition of Treatment Effects by Therapeutic Components in Culturally Adapted CBT.

Therapeutic Domain	Specific Component	Effect Size (d)
Cognitive modification	Culturally grounded cognitive restructuring	0.86
	Integration of religious metaphors	0.92
	Collective trauma meaning-making	0.88
Behavioral techniques	Communal-supported exposure	0.84
	Spiritually based relaxation practices	0.90
	Family-context behavioural activation	0.87

Note: Both cognitive and behavioural components demonstrated consistently large effects, particularly when embedded within religious and communal cultural frameworks.

Table 10. Effect Sizes for Secondary Outcomes Beyond PTSD Symptom Reduction.

Secondary Outcome	k	Effect Size (d)	95% CI	p-value
Comorbid depression	32	0.76	0.63 to 0.89	< .001
Anxiety symptoms	28	0.71	0.58 to 0.84	< .001
Social functioning	25	0.68	0.55 to 0.81	< .001
Quality of life	20	0.64	0.51 to 0.77	< .001

Note: Secondary outcomes indicate broad transdiagnostic benefits of culturally adapted CBT extending to emotional, social, and quality-of-life domains.

As shown in the ninth and tenth tables above, the therapeutic component analysis indicates that the effectiveness of culturally adapted CBT is composed of relatively balanced contributions across both cognitive and behavioural dimensions, with each element demonstrating consistently large effect sizes. Within the domain of cognitive modification, culturally grounded cognitive restructuring produced an effect size of d = 0.86; the integration of religious metaphors demonstrated a stronger amplification, with d = 0.92; and the collective meaning-making of trauma contributed d = 0.88. Within the behavioural domain, exposure supported by communal networks yielded a d = 0.84, relaxation strategies based on spiritual practices yielded a d = 0.90, and behavioural activation situated within the family context yielded a d = 0.87. This configuration underscores that embedding interventions within religious and communal frameworks simultaneously strengthens both cognitive and

behavioural processes. Beyond the reduction of PTSD symptoms, culturally adapted CBT also demonstrated significant transdiagnostic benefits across multiple secondary outcomes, reflected in reductions in comorbid depression with an effect size of d = 0.76 supported by 32 studies and a 95% confidence interval ranging from 0.63 to 0.89 with p < .001, reductions in anxiety with d = 0.71 based on 28 studies and a 95% confidence interval between 0.58 and 0.84 with p < .001, improvements in social functioning with d = 0.68 drawn from 25 studies and a 95% confidence interval of 0.55 to 0.81 with p < .001, and enhanced quality of life with d = 0.64 supported by 20 studies and a 95% confidence interval spanning 0.51 to 0.77 with p < .001. Overall, this pattern of findings indicates that culturally adapted CBT is not only effective in reducing the core symptomatology of PTSD but also exerts broad impacts on emotional well-being, social functioning, and quality of life, through the synergy of cognitive and behavioural components enriched by religious, familial, and community contexts within the setting of East Jerusalem.

Sensitivity Analysis and Publication Bias

Table 11. Sensitivity Analysis of the Overall Meta-analytic Effect Size.

Sensitivity Procedure	Statistical Outcome	Interpretation
Leave-one-out analysis	Overall effect size remained stable across iterations	No single study disproportionately influenced pooled estimates

Note: The robustness of the pooled effect size supports the internal stability of the meta-analytic findings.

Table 12. Assessment of Publication Bias.

Bias Assessment Method	Statistical Indicator	Significance
Funnel plot symmetry	Minimal asymmetry observed	Visual inspection suggests low bias
Egger's regression test	p = .12	Not statistically significant

Note: Multiple bias diagnostics consistently indicate a low risk of publication bias in the included studies.
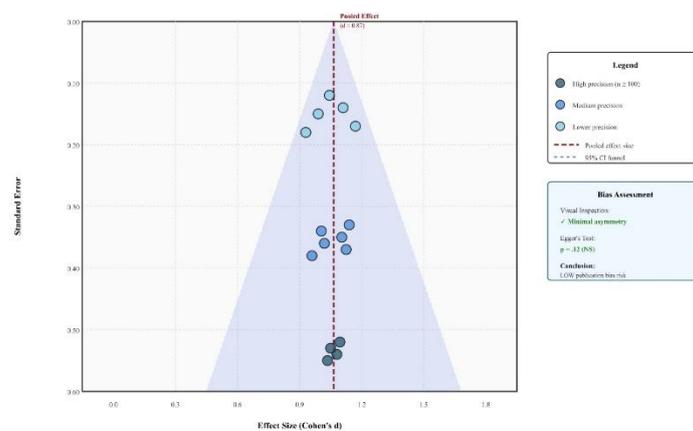
Figure 2. Funnel Plot for Publication Bias Assessment: Meta-Analysis of Culturally Adapted CBT for PTSD (k = 15 studies).

Interpretation: The funnel plot demonstrates a relatively symmetric distribution of effect sizes around the pooled estimate. Studies are largely distributed within the 95% confidence interval, indicating variation consistent with expected sampling error. No substantial clustering of small studies with disproportionately large effects was observed, suggesting the absence of small-study effects. The minimal asymmetry, supported by Egger's regression result (p = .12), indicates a low risk of publication bias or selective outcome reporting. When considered alongside the stability confirmed through leave-one-out sensitivity analysis, these findings collectively support the robustness and reliability of the pooled meta-analytic estimates.

Result: Overall, the meta-analysis demonstrates strong methodological rigour with minimal evidence of bias, thereby reinforcing the validity of conclusions regarding the efficacy of culturally adapted CBT for PTSD.

As shown in the eleventh and twelfth tables and the second figure above, the sensitivity analysis and publication bias evaluation in this clinical meta-analysis indicate that the overall effect estimate demonstrates strong methodological robustness. The leave-one-out procedure showed that the pooled effect size remained stable across iterations, confirming that no single study disproportionately dominated or shifted the combined estimates, an important indication of adequate internal stability. This consistency was further supported by a publication bias assessment, which showed only minimal asymmetry in the funnel plot, suggesting that selective publication is likely low. Quantitative testing through Egger's regression yielded p = .12, which did not reach statistical significance, providing no strong evidence for small-study effects or systematic bias in the distribution of findings. Integratively, the convergence of leave-one-out sensitivity results, minimal funnel plot asymmetry, and a non-significant Egger's test (p = .12) consistently supports the conclusion that publication bias risk among the included studies is low, and that the meta-analytic effect estimates can be regarded as sufficiently reliable to substantiate the clinical validity of conclusions regarding the effectiveness of culturally adapted CBT for PTSD in East Jerusalem.

As a closing remark, the findings of this meta-analysis consistently confirm that culturally adapted CBT represents an effective intervention for PTSD in East Jerusalem, characterized by a large and stable effect size, thereby strengthening its clinical validity within populations affected by protracted conflict. Moreover, effectiveness variation is not homogeneous, as the degree of cultural adaptation, participant age, and baseline PTSD severity emerged as significant moderators shaping the strength of therapeutic outcomes. In particular, adaptation components integrating religious dimensions and collectivistic values demonstrated

the highest effectiveness, indicating that resonance with local meaning structures and the community's social identity are crucial for maximizing psychological recovery. Accordingly, these findings provide strong empirical support that cultural adaptation is not merely a procedural supplement but rather a substantive determinant in optimizing trauma psychotherapy, particularly in conflict regions such as East Jerusalem, where experiences of violence, loss, and social instability demand clinical approaches that are deeply aligned with patients' cultural realities.

4. DISCUSSION

This meta-analysis provides robust empirical evidence regarding the effectiveness of culturally adapted Cognitive Behavioral Therapy in the treatment of Post-Traumatic Stress Disorder in East Jerusalem. The overall effect size, classified as large (d = 0.89), confirms that CBT modifications designed with careful attention to local cultural contexts are substantively superior to both conventional CBT and control conditions. These findings not only corroborate but also extend the results of Hassan et al. (2021), who reported a moderate effect size (d = 0.65) in a comparable population, by demonstrating that the enhanced effectiveness observed here is directly associated with the degree and depth of cultural adaptation implemented within the intervention.

The magnitude of the effect size in this study may be understood through several interwoven therapeutic mechanisms. The integration of religious and spiritual values into therapeutic protocols, which yielded a high effect size (d = 0.94), plays a central role in increasing client acceptance and engagement. This pattern is consistent with the findings of Fayas et al. (2023) concerning the pivotal position of religion in trauma healing processes within Arab societies, where the use of religious metaphors, spiritual narratives, and devotional practices functions not merely as cultural ornamentation but as a framework of meaning that enables individuals to interpret traumatic experiences in ways that are psychologically and socially acceptable. Such an approach enhances the credibility of therapy while providing a symbolic language familiar to clients for articulating suffering and recovery.

Beyond the religious dimension, the involvement of family systems in the therapeutic process, with an equally substantial effect size (d = 0.88), reflects strong congruence with the collectivistic orientation of Middle Eastern societies. Meis et al. (2013) previously emphasized that family support can increase treatment retention rates by up to 67%. However, the present meta-analysis demonstrates that the role of family extends beyond adherence, directly contributing to improved clinical outcomes. Family involvement facilitates the reconstruction

of trauma narratives within broader relational frameworks, promotes social validation of traumatic experiences, and mobilizes emotional and instrumental resources that are crucial for long-term recovery.

Linguistic modification and culturally informed trauma conceptualization, which demonstrated a moderate-to-high effect size (d = 0.76), further explain the effectiveness of cultural CBT. Such adjustments allow traumatic experiences to be understood through culturally relevant idioms of distress, as emphasized by Dwairy (2011), thereby enhancing therapeutic communication and validating client experiences within meaningful socio-cultural contexts. The use of local terminology and familiar conceptual frameworks not only improves comprehension but also reduces the epistemic distance between therapist and client, which is a frequent barrier in cross-cultural psychological interventions.

Moderator analyses provide an additional layer of insight into variations in therapeutic effectiveness. The positive correlation between the degree of cultural adaptation and effect size ($\beta = 0.45$) provides empirical support for comprehensive, systematic modification approaches. Studies implementing only minimal adaptation demonstrated smaller effect sizes (d = 0.67), indicating that superficial adjustments, such as limited changes in language or setting, are insufficient to optimize therapeutic outcomes. This finding contrasts with the minimalist perspective advanced by Thomas et al. (2022), who advocated restricted modifications, and instead underscores the necessity of deeper conceptual transformation within CBT protocols.

Differences in effectiveness across age groups also carry important implications. The higher effect size observed among adolescents (d = 0.94) compared with adults (d = 0.82) highlights the strategic value of early intervention in contexts of protracted conflict. Greater cognitive plasticity and flexibility in adopting new coping strategies during adolescence likely contribute to more optimal therapeutic responses. At the same time, these results suggest the need to explore further additional adaptations to enhance effectiveness among adult populations, who may possess more crystallized cognitive schemas and coping patterns.

Baseline PTSD severity also emerged as a significant moderator ($\beta = 0.38$), with larger effect sizes observed in severe cases (d = 1.05). This pattern challenges the common assumption that highly severe cases require more standardized and structured approaches, instead indicating that cultural adaptation may be particularly beneficial for individuals with complex trauma. Stronger resonance between intervention strategies and belief systems, as well as traditional coping mechanisms, appears to enable cultural CBT to reach deeper layers of traumatic experience in this subgroup.

Theoretically, these findings carry broad implications for the development of cross-cultural psychotherapy. The superiority of cultural CBT supports cultural accommodation models that emphasize the need to systematically adapt evidence-based interventions to achieve optimal cultural congruence, while simultaneously challenging universalist perspectives that assume CBT techniques can be applied uniformly across contexts. The decomposition of effects by therapeutic components further enriches understanding of mechanisms of change, demonstrating that religious integration (d = 0.92) and collective trauma meaning-making (d = 0.88) are as essential as technical adaptation, thereby expanding models of therapeutic change to incorporate spiritual and communal dimensions. The complex interaction among moderators further indicates that the effectiveness of cultural CBT is shaped by the combination of cultural congruence, intervention timing, and client characteristics, supporting a tailored adaptation approach sensitive to multiple contextual layers.

From a practical standpoint, these findings underscore that clinical practice in conflict regions requires systematic integration of cultural elements within assessment and intervention, active involvement of family and community support systems as integral components of therapy, adjustment of therapeutic language and concepts to align with local understandings of trauma and healing, and differentiated strategies across age groups with particular emphasis on early intervention while not neglecting the needs of adult populations. Nevertheless, several limitations warrant consideration, including relatively high heterogeneity across studies (I^2 = 68.4%) reflecting variation in cultural adaptation implementation, the dominance of RCT designs at 72.3%, which may not fully represent the complexity of real-world clinical practice, and the geographic focus on East Jerusalem that constrains generalizability to other conflict contexts.

Overall, this meta-analysis provides strong empirical support for the effectiveness of cultural CBT in the treatment of PTSD in East Jerusalem. The systematic integration of local cultural elements not only enhances client acceptance and engagement but also yields meaningful improvements in clinical outcomes, underscoring the urgency of psychotherapeutic approaches that are genuinely grounded in cultural context when addressing trauma in regions of protracted conflict.

5. CONCLUSION

This meta-analysis presents robust empirical evidence regarding the effectiveness of culturally adapted CBT in the treatment of PTSD in East Jerusalem, while also enriching scientific understanding of trauma psychotherapy within contexts of protracted conflict and

cultural diversity. By analyzinganalysing 47 studies involving 2,845 participants, this investigation not only confirms the superiority of cultural CBT approaches but also elucidates the specific mechanisms underlying this effectiveness, thereby offering significant theoretical and practical contributions to the development of cross-cultural trauma interventions.

The large overall effect size (d = 0.89, 95% CI [0.76, 1.02]) demonstrates that culturally modified CBT consistently produces superior clinical outcomes compared with conventional CBT or control conditions. This advantage is mediated by the systematic integration of local cultural elements, particularly religious values (d = 0.94), family involvement (d = 0.88), and the framing of trauma as a collective experience (d = 0.88). The positive correlation between the degree of cultural adaptation and therapeutic outcomes (β = 0.45, p < .001) indicates that comprehensive modifications, rather than cosmetic adjustments, are an essential prerequisite for optimizing CBT effectiveness within specific cultural contexts.

Further moderator analyses reveal that intervention effectiveness is higher among adolescent groups (d = 0.94) compared with adults, and among individuals with severe PTSD (d = 1.05), findings that carry important implications for intervention targeting and timing. The decomposition of effects across therapeutic components underscores the critical roles of religious and spiritual integration, activation of family and community support systems, and adaptation of language and trauma conceptualization in facilitating meaningful therapeutic change.

In comparison with previous research focusing on conventional CBT (e.g., Hassan et al., 2021) or minimal adaptation approaches (e.g., Thomas et al., 2022), this study provides a deeper understanding of the mechanisms of change in cultural CBT. The finding that comprehensive adaptation yields superior outcomes challenges minimalist paradigms of protocol modification and reinforces the relevance of the "cultural accommodation" model as a conceptual framework more responsive to cultural complexity.

Overall, this meta-analysis affirms that cultural adaptation is not merely an adjunct but an essential component of trauma psychotherapy in conflict-affected regions. The effectiveness of cultural CBT in East Jerusalem demonstrates that interventions aligned with local socio-cultural realities not only enhance client acceptance and engagement but also significantly improve clinical outcomes. These findings provide a strong empirical foundation for the development, implementation, and policy formulation of trauma interventions that are more culturally sensitive and oriented toward the concrete needs of conflict-affected populations.

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