

The Effectiveness of Acceptance and Commitment Therapy on Marital Functioning, Emotion Regulation, and Secondary Traumatic Stress Symptoms in Wives of Soldiers with Post-Traumatic Stress Disorder: A Randomized Controlled Trial

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Research Article

Keywords: Acceptance and Commitment Therapy, Post-Traumatic Stress Disorders, Military Spouses, Marital Relations, Emotion Regulation, Secondary Traumatic Stress

Posted Date: July 30th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9977528/v1>

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Additional Declarations: No competing interests reported.

Abstract

Background:

Spouses of military personnel with post-traumatic stress disorder (PTSD) are at increased risk of marital difficulties, emotion regulation problems, and secondary traumatic stress symptoms. Acceptance and Commitment Therapy (ACT) has shown promise in improving psychological functioning across a range of populations; however, evidence regarding its effectiveness among military spouses remains limited. This study investigated the effectiveness of ACT on marital functioning, emotion regulation difficulties, and secondary traumatic stress symptoms among wives of soldiers with PTSD.

Methods:

This randomized controlled trial was conducted in Yazd, Iran, between September 2024 and May 2025. Fifty-two wives of military personnel with clinically significant PTSD were recruited and randomly assigned to either an ACT intervention group ($n = 26$) or a wait-list control group ($n = 26$). The intervention consisted of seven weekly ACT group sessions lasting 60–90 minutes. Outcomes were assessed at pretest, posttest, and three-month follow-up using the ENRICH Marital Satisfaction Scale (ECS), the Difficulties in Emotion Regulation Scale (DERS), and the Secondary Traumatic Stress Questionnaire (STQ). Data were analyzed using mixed repeated-measures analysis of variance.

Results:

No significant baseline differences were observed between groups (all $p > .05$). Significant group $\times$ time interaction effects were found for marital functioning, $F(1.65, 82.40) = 186.90$, $p < .001$, $\eta^2 = .789$, secondary traumatic stress symptoms, $F(1.95, 97.23) = 117.28$, $p < .001$, $\eta^2 = .701$, and emotion regulation difficulties, $F(1, 50) = 8.04$, $p = .007$, $\eta^2 = .138$. Participants receiving ACT demonstrated substantial improvements in marital functioning and significant reductions in secondary traumatic stress symptoms and emotion regulation difficulties compared with the control group. Bonferroni-adjusted comparisons indicated that improvements from pretest to posttest were maintained at the three-month follow-up.

Conclusions:

Acceptance and Commitment Therapy was effective in improving marital functioning and reducing emotion regulation difficulties and secondary traumatic stress symptoms among wives of military personnel with PTSD. The maintenance of treatment gains at follow-up suggests that ACT may provide a sustainable and clinically useful intervention for enhancing psychological well-being and family functioning in military families affected by PTSD.

Trial Registration

Introduction

Post-traumatic stress disorder (PTSD) is a chronic trauma-related condition that can develop after exposure to life-threatening events and is characterized by intrusion, avoidance, negative alterations in mood and cognition, and hyperarousal (1). In military populations, PTSD is especially common because of repeated combat exposure and deployment-related trauma, with reported prevalence ranging from 7% among all U.S. veterans to 29% among veterans of recent military campaigns, while other studies have also reported similarly high rates in Iranian and other military samples (1, 2). The impact of PTSD is not limited to the service member; it often extends to spouses and families, who may experience emotional strain, reduced marital satisfaction, loss of intimacy, anxiety, and difficulties in daily functioning and emotion regulation (3). Spouses frequently assume caregiving and family-management roles, which can further increase stress, reduce quality of life, and place substantial pressure on the family system (1). Taken together, PTSD in soldiers should be understood not only as an individual disorder, but also as a family-level problem that can disrupt marital functioning and spouse well-being (2).

Within this context, marital functioning represents a central indicator of relationship health, encompassing emotional expression, problem-solving, conflict resolution, adaptability, and role adjustment within the couple (4). Deficits in problem-solving and conflict resolution are among the strongest predictors of divorce, whereas emotional adaptability and role flexibility are essential for maintaining effective couple functioning (5). The World Health Organization describes marital functioning as shaped by couples' perceptions, cognitions, emotions, and behaviors. In military couples, this domain may be further compromised by unique stressors such as frequent relocations, deployments, limited social support, and persistent daily strain, all of which can contribute to marital instability and higher divorce rates (5, 6). Accordingly, marital functioning is a particularly relevant outcome when examining the psychological impact of PTSD in military families.

Another important domain affected in this population is emotion regulation. Emotion regulation refers to the ability to identify, manage, and express emotions in an adaptive way, and difficulties in this process are a common feature of PTSD (7). In PTSD, greater reliance on maladaptive strategies such as avoidance, rumination, and suppression, together with reduced flexibility in using more adaptive strategies such as cognitive reappraisal, has been linked to more severe symptoms (8, 9). This issue is especially important in wives of soldiers with PTSD, because ongoing exposure to their partners' emotional and behavioral difficulties may increase psychological distress, reduce quality of life, and undermine family adjustment (10). Therefore, emotion regulation may be viewed both as an important outcome and as a potential mechanism through which PTSD affects marital and family functioning in this population (9).

In addition to these difficulties, spouses of soldiers with PTSD may also experience secondary traumatic stress. Secondary traumatic stress refers to trauma-like reactions that arise from close exposure to another person's traumatic experience and may include avoidance, hypervigilance, emotional exhaustion, and intrusive distress (11). In spouses of soldiers and veterans with PTSD, this phenomenon is particularly important because veterans' posttraumatic stress symptoms can spill over into the marital relationship and intensify the spouse's own psychological burden, with studies showing elevated anxiety, depression, marital conflict, and trauma-related symptoms among partners (12, 13). Reported rates of secondary posttraumatic stress among partners vary widely across studies, ranging from 0% to 51%, but the overall evidence consistently indicates that intimate partners of traumatized veterans constitute a high-risk group (13). For this reason, secondary traumatic stress should be considered not only a collateral consequence of PTSD, but also a meaningful treatment target in spouses of military personnel (12, 14).

Although several interventions have been developed for PTSD in military personnel and their spouses, the available evidence suggests that their effects are often inconsistent, methodologically limited, or difficult to generalize to routine practice. In military populations, trauma-focused psychotherapies such as prolonged exposure and cognitive processing therapy have shown clinically meaningful symptom reduction, yet a substantial proportion of patients continue to meet PTSD criteria after treatment, and some preventive approaches, including psychological debriefing, have not demonstrated benefit and may even be harmful (15, 16). Brief psychosocial and pharmacological strategies have also produced mixed findings, with benefits often depending on timing, sample characteristics, or intervention format, while the overall reach of many programs remains limited in real-world military settings (16, 17). For spouses and families, existing interventions have included psychoeducation, couple-based therapy, group programs, retreats, internet-based support, and family resilience programs. These approaches are generally well received and may improve marital satisfaction, communication, and family adaptation, but the evidence base remains uneven and is often supported by small or nonrandomized studies (18). Moreover, many programs primarily target the service member rather than the spouse's own distress, and few studies have simultaneously addressed secondary traumatic stress, emotion regulation, and marital functioning together (18, 19). Taken together, these limitations indicate the need for a brief, evidence-based intervention that can address both individual distress and relational functioning in military families (17, 18).

Acceptance and Commitment Therapy (ACT) is a third-wave cognitive-behavioral intervention that has shown considerable promise in reducing trauma-related distress and improving psychological flexibility among individuals exposed to traumatic events. Evidence from meta-analytic studies indicates that ACT is associated with significant symptom reduction in adults with trauma-related problems, with effects ranging from moderate to large across studies, although the literature remains heterogeneous in terms of design, trauma type, and comparison conditions (20, 21). In military and veteran populations, PTSD is not only a debilitating individual disorder but also a relational one, as it can disrupt marital functioning, increase emotional strain in spouses, and contribute to distress within the family system. However, despite the growing evidence base for ACT in general trauma samples, few studies have directly

examined its effects on the spouses of military personnel with PTSD, and even fewer have simultaneously addressed marital adjustment, emotion regulation, and secondary trauma-related outcomes within the same trial (21, 22). Existing findings suggest that ACT may reduce certain trauma-related symptoms, yet the literature is still limited by small samples, differences in protocols, inconsistency in outcome measures, and a lack of rigorous randomized trials specifically focused on military couples and spouses. Therefore, the present study aimed to examine the effectiveness of ACT on marital functioning, emotion regulation, and secondary traumatic stress symptoms in spouses of soldiers with PTSD.

Methods

Study Design

This study was a randomized controlled trial with three assessment points, including pretest, posttest, and a three-month follow-up. The trial was conducted in Yazd, Iran, between September 2024 and May 2025. The study protocol was approved by the relevant ethics committee, and the trial was prospectively registered in the Iranian Registry of Clinical Trials (IRCT; Registration No. IRCT20210708051815N3) before participant enrollment.

Participants and Recruitment

The study population consisted of all wives of military personnel with PTSD who were referred in 2025 by the treatment departments of the Armed Forces and the Yazd provincial police force. After obtaining the referral list, 52 eligible participants were selected through simple random sampling and then allocated to the intervention or control group by a random allocation procedure based on a random-number table. Sample size estimation was performed using G*Power software. With an assumed effect size of 0.40, an alpha level of 0.05, a statistical power of 0.80, and two study groups, the required sample size was calculated as 52 participants, with 26 participants in each group.

Eligibility Criteria

Inclusion criteria were being the wife of a living military service member diagnosed with PTSD, having no current or previous history of major psychiatric disorder or psychiatric hospitalization, meeting the minimum cut-off score on the study measures at baseline, and providing written informed consent to participate. The PTSD status of the military spouse was verified using the PTSD Checklist for DSM-5 (PCL-5), and only cases with scores above 50 were considered to meet the study criterion for clinically significant PTSD symptoms. Exclusion criteria were the occurrence of a serious physical or psychiatric illness during the study period, hospitalization, divorce or major change in family structure, withdrawal from the study, absence from the intervention sessions beyond the acceptable limit, or poor adherence to treatment homework and between-session tasks.

Randomization and Blinding

After screening and baseline assessment, participants were randomly assigned to either the acceptance and commitment therapy (ACT) group or the control group. To minimize bias, allocation was performed after baseline measurements had been completed. Because of the nature of the intervention, blinding of participants and therapist was not possible; however, the outcome assessor and data analyst were blinded to group allocation wherever feasible. In other words, the individuals who administered the questionnaires at follow-up and the person responsible for statistical analysis were not informed of treatment assignment. This masking procedure was used to reduce assessment and analysis bias.

Intervention

The ACT group received a manualized group intervention consisting of seven weekly sessions, each lasting 60 to 90 minutes. The intervention protocol was based on Walser and Westrup's ACT manual (23). The protocol was selected because ACT has been shown to target psychological flexibility and trauma-related distress, both of which are highly relevant in spouses of military personnel with PTSD. The content of the sessions was organized around the core processes of ACT. The first session introduced the program, established group rules, and provided psychoeducation about PTSD and its psychological and family consequences. The second session focused on acceptance of distressing thoughts and emotions. The third session addressed cognitive defusion and observing thoughts without being dominated by them. The fourth session emphasized present-moment awareness and mindfulness skills. The fifth session worked on self-as-context and the distinction between internal experiences and the self. The sixth session focused on values clarification, especially in relation to marital and family roles. The seventh session emphasized committed action, application of learned skills in daily life, and relapse prevention. The group format was chosen because it allows participants to share experiences, reduce isolation, and reinforce therapeutic learning through interpersonal interaction.

Control Condition

The control group received a waiting-list condition. Participants in this group did not receive any structured psychological intervention during the active phase of the study, but they were followed weekly by the researcher to maintain contact and reduce attrition. After completion of the final follow-up assessment, the ACT protocol was offered to the control group for ethical reasons. This waiting-list design was selected because it allows comparison with a no-treatment condition while still ensuring that all participants eventually have access to the intervention.

Outcome Measures

Primary outcomes were marital functioning, emotion regulation, and secondary traumatic stress. Marital functioning was assessed using the ENRICH Marital Satisfaction Scale (ECS), emotion regulation was measured using the Difficulties in Emotion Regulation Scale (DERS), and secondary traumatic stress was assessed using the Secondary Traumatic Stress Questionnaire (STQ). The PTSD status of the military spouse was confirmed with the PCL-5. All questionnaires were administered at baseline, immediately

after the intervention, and three months later. The study questionnaires were anonymized using identification codes to ensure confidentiality and to prevent linkage of responses to names.

ENRICH Marital Satisfaction Scale (ECS):

The ENRICH Marital Satisfaction Scale, developed by Olson in 2000 and administered in a large sample of married couples, is designed to identify potential areas of difficulty as well as strengths within marital relationships. The questionnaire consists of 35 items and includes four domains: idealistic distortion, marital satisfaction, communication, and conflict resolution. It assesses marital satisfaction through items such as "I am satisfied with how we make decisions and resolve our conflicts." Responses are rated on a five-point Likert scale ranging from strongly agree to strongly disagree. Items 3, 5, 6, 7, 10, 13, 14, 19, 21, 22, 23, 26, 27, 28, 29, 32, 33, and 34 are reverse scored. In the original version of the scale, Cronbach's alpha was reported as 0.96 (24). The questionnaire was standardized in Iran by Torabi et al. in 2015, with a reported Cronbach's alpha of 0.70 (25).

Difficulties in Emotion Regulation Scale (DERS):

The Difficulties in Emotion Regulation Scale (DERS) is a 36-item self-report instrument developed by Gratz and Roemer in 2004 to assess clinically relevant difficulties in emotion regulation. Responses are rated on a 5-point Likert scale ranging from 1 to 5. The scale comprises six subscales: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. According to the original validation study, a total score above 36 indicates clinically significant difficulties in emotion regulation, with higher scores reflecting greater impairment. Based on factor analysis, Gratz and Roemer reported good internal consistency for the total scale and all six subscales, with Cronbach's alpha coefficients above 0.80 and an overall internal consistency of 0.93 (26). The Persian version of the scale was standardized in Iran by Azizi et al. in 2009, who reported a Cronbach's alpha of 0.92 (27).

Secondary Traumatic Questionnaire (STQ):

The Secondary Trauma Questionnaire (STQ), developed by Motta et al. in 1999, is a self-report measure designed to assess secondary traumatic stress symptoms in individuals indirectly exposed to traumatic events through close contact with trauma survivors. The instrument consists of 18 items rated on a 5-point Likert scale, with higher total scores indicating greater levels of secondary traumatic stress. In the original validation study, the STQ demonstrated satisfactory psychometric properties, with Cronbach's alpha coefficients of .88 among students and .75 among mental health professionals. A principal components analysis with varimax rotation identified two factors, namely Intrusive Cognitions and Avoidance Behaviors, with all items except Items 18 and 19 loading on these factors. Evidence of convergent validity was also reported, as STQ scores were significantly correlated with established measures of PTSD, including intrusive and avoidant cognitions and the frequency and intensity of posttraumatic stress symptoms ($r = .33-.56, p < .01$) (28). In Iran, the STQ was standardized on a sample of 641 children of war veterans, and the results supported a unidimensional factor structure. The

Persian version showed good psychometric properties, including a Cronbach's alpha coefficient of .88 and a test-retest reliability coefficient of .78, supporting its reliability and validity for research and clinical applications (29).

PTSD Checklist for DSM-5 (PCL-5):

The PTSD Checklist for DSM-5 (PCL-5) is a 20-item self-report instrument developed by Weathers and colleagues in 2013 to assess posttraumatic stress symptoms according to DSM-5 criteria. It includes four symptom clusters: intrusion, avoidance, negative alterations in cognition and mood, and alterations in arousal and reactivity. Items are rated on a 5-point scale from 0 to 4, with higher scores indicating greater PTSD symptom severity. The total score ranges from 0 to 80, and a cutoff score of 33 or higher is commonly used to identify probable PTSD, although the optimal threshold may vary depending on the population and purpose of assessment. In the original validation studies, the scale demonstrated strong psychometric properties, including excellent internal consistency and construct validity (30). In Iran, the Persian version was standardized by Fathi Ashtiani in 2017 using a sample of 157 Tehran residents who had experienced severe stress; exploratory factor analysis supported a five-factor structure in the Iranian cultural context. The Persian version also showed high internal consistency, with a Cronbach's alpha of 0.92, and acceptable convergent validity through a significant correlation with MCCP scores ($r = 0.74$) as well as divergent validity with CD-RISC scores ($r = 0.46$) (31).

Statistical Analysis

Data were analyzed using SPSS version 29. Descriptive statistics, including means, standard deviations, minimum and maximum values, were calculated for all variables at each measurement point. The normality of the data and residuals was examined before inferential testing. Between-group comparability at baseline was evaluated using appropriate tests, and effect sizes were also considered so that baseline differences were not interpreted solely on the basis of p values. The primary analysis examined the effects of time, group, and group-by-time interaction. Although repeated-measures ANOVA can be used for such data, a mixed repeated-measures model or linear mixed model is preferable in randomized trials with follow-up because it handles missing data and attrition more appropriately. Therefore, the main analysis should ideally be conducted with a mixed model; if repeated-measures ANOVA is retained, an intention-to-treat approach should also be reported, and missing data handling should be specified clearly. The assumptions of homogeneity of variance and sphericity were checked, and when sphericity was violated, Greenhouse-Geisser or Huynh-Feldt corrections were applied. Significant effects were followed by Bonferroni- or Sidak-adjusted pairwise comparisons. Effect sizes were reported using partial eta squared for the omnibus ANOVA and, where appropriate, Cohen's d or Hedges g for pairwise contrasts. In addition, 95% confidence intervals were reported for the main estimates.

Ethics approval and consent to participate

The study was approved by the Ethics Committee of Baqiyatallah University of Medical Sciences (ethics approval code: IR.BMSU.REC.1404.210). The trial was registered in the Iranian Registry of Clinical Trials prior to participant enrollment. All participants provided written informed consent before inclusion in the study.

Participant Flow and Adherence

The flow of participants through the study was recorded and reported in accordance with the CONSORT framework. The numbers of participants screened, assessed for eligibility, randomized, allocated to each group, lost to follow-up, and included in the final analysis were documented for both study groups. Adherence to the intervention was monitored by recording attendance at each session, completion of homework assignments, and dropout rate.

Reporting guideline

This randomized controlled trial was reported in accordance with the Consolidated Standards of Reporting Trials (CONSORT) guidelines.

Results

Figure 1. CONSORT flow diagram of participant recruitment, allocation, follow-up, and analysis

Participant Characteristics

A total of 52 wives of military personnel diagnosed with post-traumatic stress disorder (PTSD) participated in the study and were randomly assigned to either the Acceptance and Commitment Therapy (ACT) group (n = 26) or the wait-list control group (n = 26). No significant between-group differences were observed at baseline regarding age, duration of marriage, marital functioning, secondary traumatic stress symptoms, or emotion regulation difficulties (all p > .05), indicating successful randomization and baseline comparability.

Table 1. Baseline Characteristics and Outcome Descriptive Statistics Across Assessment Points

Variable	ACT (n = 26)	Control (n = 26)	p
Age (years)	28.00 ± 3.58	28.62 ± 4.41	.580
Duration of marriage	21.81 ± 1.99	21.31 ± 1.18	.264
Marital functioning (Pretest)	68.12 ± 4.08	67.81 ± 3.01	.758
Secondary traumatic stress (Pretest)	68.96 ± 5.44	69.58 ± 5.68	.692
Emotion regulation difficulties (Pretest)	103.15 ± 11.15	105.92 ± 9.60	.342

Outcome	Group	Pretest Mean $\pm$ SD	Posttest Mean $\pm$ SD	Follow-up Mean $\pm$ SD
Marital Functioning	ACT	16.42 $\pm$ 1.68	34.81 $\pm$ 2.45	33.81 $\pm$ 2.87
	Control	16.35 $\pm$ 1.50	17.77 $\pm$ 4.68	16.12 $\pm$ 1.48
Secondary Traumatic Stress	ACT	68.96 $\pm$ 5.44	36.73 $\pm$ 4.80	36.85 $\pm$ 4.58
	Control	69.58 $\pm$ 5.68	66.77 $\pm$ 8.94	65.31 $\pm$ 6.37
Emotion Regulation Difficulties	ACT	103.15 $\pm$ 11.15	93.96 $\pm$ 10.13	88.96 $\pm$ 10.13
	Control	105.92 $\pm$ 9.60	101.27 $\pm$ 10.44	96.27 $\pm$ 10.44

Note. Values are presented as mean $\pm$ standard deviation. Higher marital functioning scores indicate better marital functioning, whereas higher scores on the Secondary Traumatic Stress Scale and DERS indicate greater symptom severity.

Preliminary Analyses

Prior to conducting the primary analyses, assumptions of repeated-measures ANOVA were examined. Mauchly's test indicated a violation of the sphericity assumption for marital functioning ($W = .786$, $\chi^2 = 11.77$, $p = .003$); therefore, Greenhouse–Geisser corrected statistics ($\epsilon = .824$) were reported for this outcome. Sphericity was met for secondary traumatic stress ($W = .971$, $\chi^2 = 1.42$, $p = .492$). Homogeneity of variance was generally supported across study variables, with the exception of marital functioning at follow-up.

Table 2. Assumption Testing and Mixed Repeated-Measures ANOVA Results

Outcome	Mauchly's W	p	Greenhouse-Geisser ϵ	Group $\times$ Time F(df)	p	Partial η^2
Marital Functioning	.786	.003	.824	186.90 (1.65, 82.40)	< .001	.789
Secondary Traumatic Stress	.971	.492	.972	117.28 (1.95, 97.23)	< .001	.701
Emotion Regulation Difficulties	—	—	.500	8.04 (1, 50)	.007	.138

Note. Greenhouse–Geisser corrections were applied where appropriate. Partial eta-squared (η^2) values of .01, .06, and .14 represent small, medium, and large effects, respectively.

Effects of ACT on Marital Functioning

The mixed repeated-measures ANOVA demonstrated a significant group $\times$ time interaction effect for marital functioning, $F(1.65, 82.40) = 186.90$, $p < .001$, $\eta^2 = .789$, indicating differential changes over time

between the ACT and control groups. Participants in the ACT group exhibited a substantial increase in marital functioning following treatment, whereas the control group showed minimal change. Improvements remained stable at the three-month follow-up assessment.

Bonferroni-adjusted pairwise comparisons revealed significant improvements from pretest to posttest (MD = -9.90, 95% CI [-11.29, -8.52], $p < .001$) and from pretest to follow-up (MD = -8.58, 95% CI [-9.52, -7.63], $p < .001$). No significant difference was observed between posttest and follow-up assessments ($p = .084$), indicating maintenance of treatment gains.

Effects of ACT on Secondary Traumatic Stress

A significant group $\times$ time interaction effect was observed for secondary traumatic stress symptoms, $F(1.95, 97.23) = 117.28$, $p < .001$, $\eta p^2 = .701$. Participants receiving ACT demonstrated marked reductions in symptom severity at posttest and follow-up, whereas the control group exhibited only minimal changes over time.

Bonferroni-adjusted comparisons indicated significant reductions from pretest to posttest (MD = 17.52, 95% CI [14.69, 20.35], $p < .001$) and from pretest to follow-up (MD = 18.19, 95% CI [15.46, 20.92], $p < .001$). No significant difference was detected between posttest and follow-up assessments ($p = 1.000$), suggesting sustained treatment effects.

Effects of ACT on Emotion Regulation Difficulties

The analysis also revealed a significant group $\times$ time interaction effect for emotion regulation difficulties, $F(1, 50) = 8.04$, $p = .007$, $\eta p^2 = .138$. Participants in the ACT group experienced progressive reductions in DERS scores across assessment points, whereas the control group showed comparatively smaller changes.

Bonferroni-adjusted pairwise comparisons demonstrated significant improvements from pretest to posttest (MD = 6.92, 95% CI [4.94, 8.91], $p < .001$) and from pretest to follow-up (MD = 11.92, 95% CI [9.94, 13.91], $p < .001$), indicating sustained enhancement in emotion regulation capacities.

Table 3. Bonferroni Pairwise Comparisons and Between-Group Effect Sizes

Outcome	Pre vs Post MD (95% CI)	Pre vs Follow-up MD (95% CI)	Post vs Follow-up MD (95% CI)	Cohen's d Posttest	Cohen's d Follow-up
Marital Functioning	-9.90 (-11.29, -8.52)	-8.58 (-9.52, -7.63)	1.33 (-0.13, 2.78)	4.48	6.49
Secondary Traumatic Stress	17.52 (14.69, 20.35)	18.19 (15.46, 20.92)	0.67 (-1.78, 3.12)	-4.19	-5.13
Emotion Regulation Difficulties	6.92 (4.94, 8.91)	11.92 (9.94, 13.91)	5.00 (5.00, 5.00)	-0.71	-0.71

Note. Mean differences (MD) are based on Bonferroni-adjusted pairwise comparisons. Cohen's d values represent standardized between-group effect sizes at posttest and follow-up.

Summary of Findings

Overall, ACT produced significant and clinically meaningful improvements in marital functioning while simultaneously reducing secondary traumatic stress symptoms and emotion regulation difficulties among wives of military personnel with PTSD. The large interaction effect sizes observed for marital functioning ($\eta^2 = .789$) and secondary traumatic stress ($\eta^2 = .701$), together with the maintenance of gains at follow-up, provide strong evidence for the sustained effectiveness of ACT in this population.

Discussion

The present study demonstrated that ACT significantly improved marital functioning among wives of military personnel with PTSD. A significant and large group $\times$ time interaction effect indicated that participants receiving ACT experienced substantially greater improvements in marital functioning than those in the control group, and these improvements were maintained at the three-month follow-up. This finding is consistent with previous research demonstrating the effectiveness of ACT in enhancing relationship quality, marital adjustment, marital satisfaction, intimacy, and family functioning (32, 33). For example, previous studies have shown that ACT significantly improves family functioning and marital satisfaction among women experiencing psychological difficulties and promotes greater marital adjustment among married individuals by increasing adaptive interpersonal responses and reducing dysfunctional attitudes. Similarly, research conducted among distressed couples has reported improvements in intimacy and relationship quality following ACT interventions through the enhancement of acceptance, mindfulness, and commitment to shared values (33). The present findings are also particularly relevant in the context of military families, where PTSD-related symptoms frequently disrupt communication, emotional closeness, and overall family functioning. Previous investigations have shown that spouses of military personnel and veterans with PTSD often experience emotional burden, caregiver strain, reduced relationship satisfaction, and impaired family functioning (1, 3, 12). Given the established association between marital functioning and psychological well-being among military

spouses, the substantial improvements observed in the present study suggest that ACT may represent an effective intervention for strengthening couple relationships and promoting family resilience in trauma-affected military families.

The beneficial effects of ACT on marital functioning may be explained through its core therapeutic processes, particularly psychological flexibility, acceptance, cognitive defusion, mindfulness, and values-based action (23). Spouses of individuals with PTSD are routinely exposed to chronic relational stressors, including emotional withdrawal, irritability, avoidance, hypervigilance, and communication difficulties, all of which may contribute to rigid coping patterns and deterioration in marital functioning. ACT helps individuals reduce experiential avoidance and disengage from ineffective efforts to control distressing thoughts and emotions, thereby enabling more flexible and adaptive responses to interpersonal challenges. Through mindfulness and cognitive defusion techniques, participants learn to observe difficult emotions and relationship-related thoughts without becoming entangled in them, reducing emotional reactivity and interpersonal conflict (34). Furthermore, ACT facilitates clarification of personal and family values and encourages commitment to behaviors that remain consistent with those values despite ongoing stress and adversity. As a result, participants may become more capable of engaging in supportive communication, empathy, emotional responsiveness, and constructive problem-solving within their marital relationships. These mechanisms are particularly important for military spouses who frequently encounter trauma-related family stressors and must balance caregiving responsibilities with maintaining healthy couple relationships. The maintenance of treatment gains at follow-up further suggests that ACT promotes enduring changes in psychological flexibility and relational behavior, allowing participants to continue applying adaptive coping and communication skills beyond the completion of treatment (20, 21).

The present study demonstrated that ACT significantly reduced difficulties in emotion regulation among wives of military personnel with PTSD. A significant group $\times$ time interaction effect indicated that participants who received ACT experienced greater reductions in emotion regulation difficulties than those in the control group, and these improvements were maintained at the three-month follow-up. This finding is consistent with previous research demonstrating the effectiveness of ACT in improving emotional functioning and reducing emotion regulation difficulties across a range of clinical and non-clinical populations (35, 36). Previous studies have reported that ACT decreases difficulties in emotion regulation by enhancing emotional awareness, reducing maladaptive regulatory strategies, and increasing psychological flexibility. Consistent with the findings of McKay et al. (37), ACT has been shown to reduce emotional dysregulation and interpersonal difficulties through acceptance-based processes and increased behavioral flexibility. Similarly, studies conducted by Gratz and Gunderson (38) and Blackledge and Hayes (39) have demonstrated that ACT-related interventions contribute to significant improvements in emotion regulation capacities through greater emotional awareness and acceptance of internal experiences. The present findings are particularly important in the context of military families, as spouses of individuals with PTSD are frequently exposed to chronic emotional stress, caregiving burden, uncertainty, and trauma-related family challenges. Previous studies have shown that military spouses often experience elevated levels of psychological distress, secondary

traumatic stress, emotional exhaustion, and difficulties managing intense emotional experiences associated with their partner's PTSD symptoms (10, 14). Furthermore, evidence suggests that emotion regulation difficulties are strongly associated with PTSD-related distress and impaired family functioning among trauma-exposed populations (7, 8). Therefore, the significant reduction in emotion regulation difficulties observed in the present study suggests that ACT may help military spouses manage the emotional demands associated with living alongside a partner affected by PTSD.

The beneficial effects of ACT on emotion regulation can be explained through several core therapeutic processes. One of the central assumptions of ACT is that psychological distress is often maintained by experiential avoidance and persistent attempts to control, suppress, or escape unwanted emotional experiences. Spouses of individuals with PTSD frequently encounter distressing emotions such as anxiety, guilt, frustration, sadness, helplessness, and chronic worry related to their caregiving role and the unpredictable nature of PTSD symptoms (20). ACT teaches individuals to approach these emotions with openness and acceptance rather than avoidance, thereby reducing maladaptive emotional regulation strategies such as suppression and emotional disengagement. Through mindfulness practices, participants learn to attend to present-moment experiences and observe emotions without judgment, which enhances emotional awareness and facilitates more adaptive responses to distressing situations. Cognitive defusion techniques further help individuals separate themselves from distressing thoughts and emotional reactions, allowing them to perceive internal experiences as temporary mental events rather than objective realities. In addition, ACT promotes psychological flexibility by encouraging individuals to persist in valued actions despite emotional discomfort (21). This process is particularly relevant for military spouses, who often must maintain family responsibilities and interpersonal functioning while coping with ongoing trauma-related stressors. As participants become more willing to experience difficult emotions and less dependent on avoidance-based coping strategies, they may develop more adaptive methods of regulating emotional experiences and responding to stressful situations (23). The maintenance of treatment gains at follow-up suggests that ACT produced durable improvements in psychological flexibility and emotional processing rather than merely temporary reductions in distress, enabling participants to continue utilizing adaptive emotion regulation skills beyond the completion of treatment.

The present study demonstrated that ACT significantly reduced secondary traumatic stress symptoms among wives of military personnel with PTSD. Participants who received ACT showed substantially greater reductions in secondary traumatic stress symptoms compared with the control group, and these improvements were maintained at the three-month follow-up assessment. Although research directly examining the effectiveness of ACT for secondary traumatic stress among military spouses remains limited, the present findings are consistent with a growing body of evidence supporting the effectiveness of ACT in reducing PTSD symptoms and trauma-related psychological distress. Recent systematic reviews and meta-analyses have reported that ACT produces meaningful reductions in trauma-related symptoms by targeting core psychological processes that maintain distress, including experiential avoidance, cognitive fusion, and psychological inflexibility (20, 21). Similarly, research has demonstrated that acceptance-based processes are associated with lower PTSD symptom severity, suggesting that

greater willingness to experience distressing thoughts, emotions, and memories may facilitate psychological adaptation following exposure to trauma. The current findings extend this literature by demonstrating that ACT may also be beneficial for individuals who experience trauma-related distress indirectly through close and prolonged exposure to a partner's traumatic experiences (23). This extension is particularly important because secondary traumatic stress has been increasingly recognized as a significant mental health concern among spouses of military personnel and veterans with PTSD. Previous studies have shown that military spouses frequently experience emotional burden, chronic stress, intrusive trauma-related thoughts, hypervigilance, and psychological distress as a consequence of living with a partner affected by PTSD (3, 13). Therefore, the substantial reductions in secondary traumatic stress observed in the present study suggest that ACT may serve as an effective intervention for addressing the unique psychological challenges faced by trauma-exposed military families.

The observed improvement in secondary traumatic stress symptoms may be explained through the core mechanisms of ACT, particularly the reduction of experiential avoidance and the enhancement of psychological flexibility. Individuals experiencing secondary traumatic stress often attempt to suppress, control, or avoid distressing emotions and trauma-related thoughts arising from their partner's suffering. However, ACT proposes that such avoidance strategies paradoxically maintain and exacerbate psychological distress over time. Through acceptance-based interventions, participants learn to approach difficult emotional experiences with openness rather than resistance, reducing the maladaptive cycle of avoidance and emotional suppression. Consistent with previous findings, experiential avoidance appears to be one of the strongest predictors of trauma-related symptom severity, whereas greater acceptance is associated with lower levels of PTSD-related distress (40). ACT also employs mindfulness and cognitive defusion techniques that help individuals observe distressing thoughts, memories, and emotional reactions as transient psychological events rather than objective realities requiring immediate control or avoidance. These processes may be particularly valuable for spouses of individuals with PTSD, who are frequently exposed to ongoing trauma reminders, emotional dysregulation, and caregiving-related stress. Furthermore, ACT promotes engagement in values-based and meaningful life activities despite the presence of distressing internal experiences (23). By shifting attention from symptom control to valued action, participants may become better able to maintain interpersonal functioning, family roles, and psychological well-being while coping with trauma-related stressors. The maintenance of treatment gains at follow-up suggests that ACT facilitated enduring changes in psychological flexibility and adaptive coping rather than merely producing short-term symptom relief, thereby supporting sustained reductions in secondary traumatic stress symptoms over time.

Conclusion

The present randomized controlled trial demonstrated that Acceptance and Commitment Therapy (ACT) was effective in improving marital functioning and reducing both emotion regulation difficulties and secondary traumatic stress symptoms among wives of military personnel with PTSD. Participants who received ACT showed significantly greater improvements across all outcome variables compared with

the control group, and these therapeutic gains were maintained at the three-month follow-up assessment. The findings suggest that ACT may effectively address both relational and psychological challenges experienced by military spouses who are exposed to chronic stress associated with their partners' PTSD. By enhancing psychological flexibility, promoting acceptance of difficult internal experiences, and encouraging engagement in values-based actions, ACT appears to facilitate adaptive emotional functioning and healthier interpersonal relationships. Given the substantial burden experienced by military families affected by PTSD, ACT may represent a valuable intervention for improving psychological well-being and strengthening family resilience in this vulnerable population.

Limitations

Several limitations should be considered when interpreting the findings of the present study. First, the relatively small sample size may limit the generalizability of the results to broader populations of military spouses. Second, all outcome measures were assessed using self-report questionnaires, which may be influenced by response biases, social desirability, and subjective perceptions. Third, participants were recruited from a specific geographical and cultural context, which may restrict the applicability of the findings to other military populations and cultural settings. Fourth, although treatment effects were maintained at the three-month follow-up, longer follow-up periods are needed to determine the long-term stability of the observed improvements. Finally, the study focused exclusively on wives of military personnel with PTSD; therefore, the findings may not generalize to husbands, other family caregivers, or spouses of individuals experiencing different psychological conditions.

Clinical Implications and Future Directions

The findings of the present study have important clinical implications for mental health professionals working with military families affected by PTSD. Given the significant improvements observed in marital functioning, emotion regulation, and secondary traumatic stress symptoms, ACT may be incorporated into psychological services designed for spouses and family members of military personnel. Interventions targeting psychological flexibility and acceptance-based coping strategies may help reduce the psychological burden associated with indirect exposure to trauma and improve overall family functioning. Future studies should employ larger and more diverse samples, include longer follow-up assessments, and compare ACT with other evidence-based interventions, such as Cognitive Behavioral Therapy, Emotion-Focused Therapy, or mindfulness-based interventions. Additionally, future research should investigate the specific mechanisms through which ACT influences secondary traumatic stress and relationship functioning among military spouses, as well as examine its effectiveness in different military and caregiver populations.

Declarations

Ethics Approval and Consent to Participate

The study was approved by the Ethics Committee of Baqiyatallah University of Medical Sciences (ethics approval code: IR.BMSU.REC.1404.210). The trial was prospectively registered in the Iranian Registry of Clinical Trials (IRCT; Registration No. IRCT20210708051815N3). All participants provided written informed consent before inclusion in the study.

Availability of Data and Materials

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare that they have no competing interests.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' Contributions

AMM conceived and designed the study. AMM and EA were responsible for participant recruitment and data collection. AMM conducted the statistical analyses and drafted the manuscript. EA supervised the study and critically revised the manuscript for important intellectual content as the corresponding author. Both authors read and approved the final manuscript.

Acknowledgements

The authors would like to express their sincere gratitude to all participants who generously contributed their time and experiences to this study. The authors also thank the military and healthcare authorities who facilitated participant recruitment and supported the implementation of the study.

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Figures

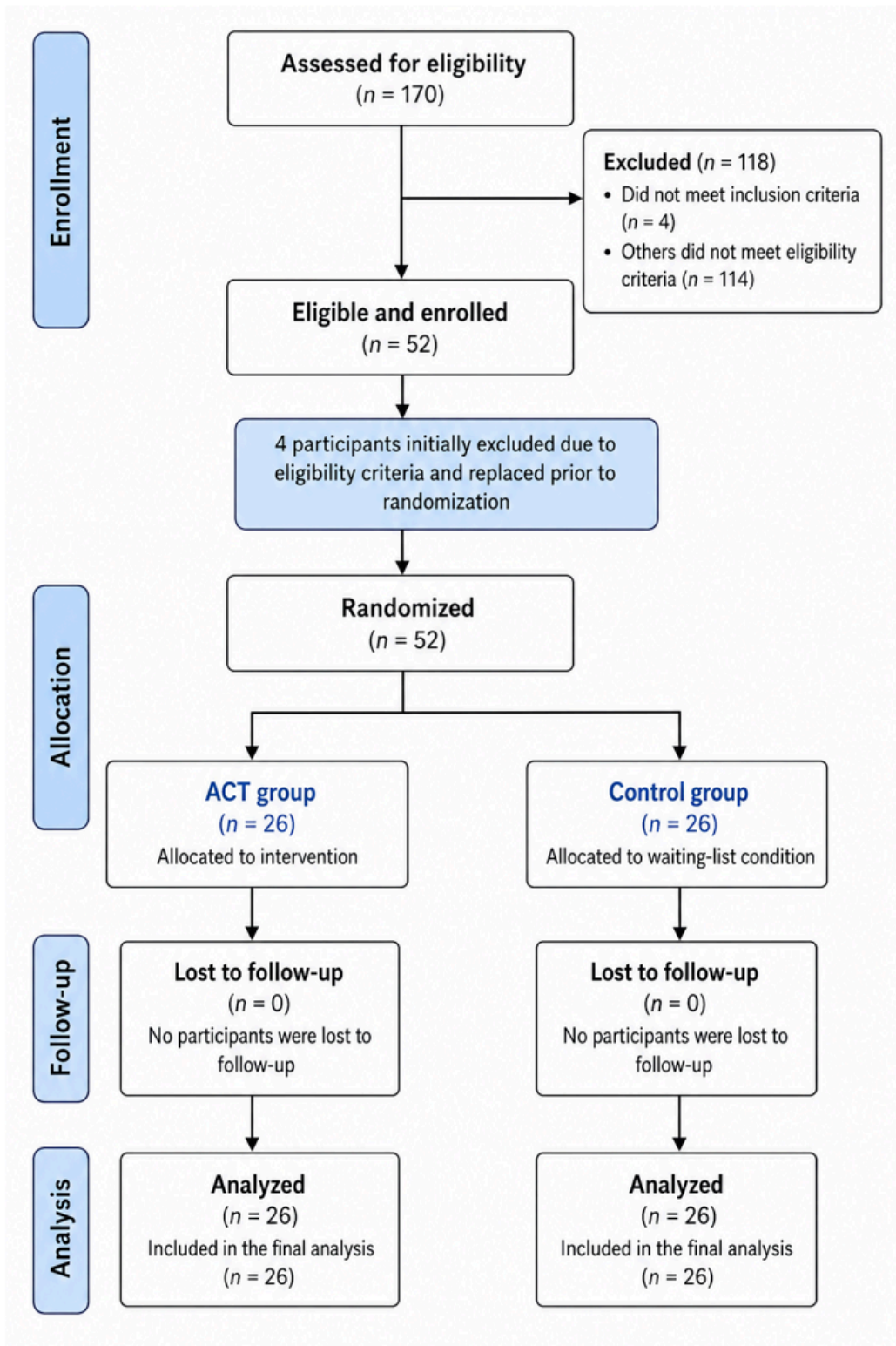


Figure 1

CONSORT flow diagram of participant recruitment, allocation, follow-up, and analysis