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The Effect of Written Exposure and Cognitive Processing Therapy on Decreasing Alexithymia and Experiential Avoidance in Women with Post-Traumatic Stress Disorder

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Abstract

Background: Post-Traumatic Stress Disorder (PTSD) affects women at approximately twice the rate of men, often leading to complex symptoms like alexithymia and experiential avoidance.

Objectives: This study aimed to compare the effectiveness of Written Exposure Therapy (WET) and Cognitive Processing Therapy (CPT) on decreasing alexithymia and experiential avoidance in women with PTSD.

Methods: This research was a quasi-experimental study conducted in 2024. The statistical population included all women aged 18 to 40 with PTSD referred to counseling centers and psychological clinics in Tehran. A convenience sample of 90 eligible participants was selected and randomly assigned to a WET group (n = 30), a CPT group (n = 30), and a control group (n = 30). The WET group received five sessions, while the CPT group received 12 sessions. Data were collected using the Toronto Alexithymia Scale and the Acceptance and Action Questionnaire-II, and analyzed using repeated-measures ANOVA.

Results: Both WET and CPT interventions were effective, leading to significant reductions in alexithymia ($F = 68.42$, $P<0.001$, $\eta^2p = 0.44$) and experiential avoidance ($F = 59.87$, $P<0.001$, $\eta^2p = 0.41$) at post-test and three-month follow-up. The findings showed that WET was more effective than CPT in decreasing alexithymia (mean reduction: 16.6 vs. 14.2 points), whereas CPT had a greater effect on reducing experiential avoidance (mean reduction: 12.6 vs. 16.6 points) ($P<0.05$).

Conclusion: Both therapies significantly reduce alexithymia and experiential avoidance, with WET showing greater efficacy for alexithymia and CPT for experiential avoidance, sustained at three-month follow-up. These findings inform clinicians in selecting targeted interventions based on patients' predominant symptoms, enhancing personalized treatment for women with PTSD.

Keywords: Post-Traumatic Stress Disorder, Cognitive Processing, Alexithymia, Experiential Avoidance, Written Exposure Therapy

1. Background

Post-Traumatic Stress Disorder (PTSD) is a severe and persistent psychological condition that can arise after experiencing or witnessing a traumatic event. It is characterized by intrusive memories, avoidance of trauma-related stimuli, negative alterations in cognition and mood, and hyperarousal.[1] Epidemiological studies have consistently demonstrated that women are approximately twice as likely as men to develop PTSD in their lifetime.[2] This disparity is partly attributed to societal factors, such as higher exposure to gender-based violence and cultural expectations that may amplify emotional distress in women. Researchers have found that women are also more susceptible to experiencing specific types of trauma, such as sexual assault and interpersonal violence, which are strongly linked to the development of PTSD.[3,4] The symptoms in women with PTSD often manifest differently than in men, including a greater tendency toward emotional numbness, avoidance behaviors, and feelings of depression and anxiety.[5] These symptoms can profoundly impair daily functioning, leading to significant social, occupational, and personal distress.[6] Understanding the multifaceted nature of PTSD in this population is crucial for developing effective and targeted therapeutic interventions.

Beyond the core diagnostic criteria, PTSD is frequently comorbid with other psychological constructs that can complicate treatment and impede recovery. Two such constructs are alexithymia and experiential avoidance, both of which are prominent in women with PTSD.[7,8] Alexithymia, literally meaning "no words for emotions," is a personality trait characterized by an inability to identify and describe one's own feelings, a difficulty distinguishing between emotions and bodily sensations of

emotional arousal, and a preference for externally oriented thinking.[9] The prevalence of alexithymia among individuals with PTSD is notably high, with studies reporting rates up to 85%, reflecting a bidirectional relationship where trauma may impair emotional awareness, and alexithymia, in turn, may exacerbate PTSD symptoms by hindering emotional processing, such as when individuals struggle to articulate distress from intrusive memories.[10] Furthermore, alexithymia can significantly interfere with the therapeutic process by hindering emotional expression and cognitive processing, which are central to many trauma-focused therapies.[11]

Another critical variable in the maintenance of PTSD is experiential avoidance, defined as the tendency to avoid or escape from internal experiences such as thoughts, feelings, memories, and physical sensations, even when doing so may cause long-term harm.[8] In the context of PTSD, individuals often engage in avoidance behaviors to escape from intrusive memories or distressing emotions related to the trauma. While providing temporary relief, this avoidance prevents the necessary emotional and cognitive processing of the traumatic event, thereby perpetuating the cycle of fear and re-experiencing symptoms.[12] Experiential avoidance is a key mechanism underlying the persistence of PTSD symptoms and is a primary target of many evidence-based treatments.[13] The high comorbidity of alexithymia and experiential avoidance with PTSD underscores the need for therapeutic approaches that can effectively address both of these debilitating traits.

In response to the pervasive impact of PTSD, several evidence-based psychotherapies have been developed and refined over the past few decades. Among the most widely researched and supported treatments are Cognitive Processing Therapy (CPT) and Written Exposure Therapy (WET). CPT is a manualized, cognitive-behavioral treatment that focuses on how a person thinks about and evaluates their traumatic experience.[14] The therapy aims to help individuals identify and challenge maladaptive beliefs related to the trauma, such as self-blame or safety concerns, through a structured process of cognitive restructuring.[15] CPT typically involves 12 sessions and has demonstrated strong efficacy in reducing PTSD symptoms across a variety of trauma types and populations.[16] WET, in contrast, is a brief, five-session, exposure-based intervention.[17] It involves clients writing a detailed narrative of their traumatic experience and their associated thoughts and feelings, with a focus on confronting the traumatic memory.[18] WET has been shown to be effective and is often associated with lower dropout rates compared to more time-intensive therapies, making it a viable and accessible treatment option.[19]

Previous research has primarily focused on establishing the efficacy of CPT and WET individually.[16,18] While both are considered first-line treatments, a comparative understanding of their specific mechanisms of change and differential effectiveness on comorbid symptoms like alexithymia and experiential avoidance remains an area of ongoing research. Given the high prevalence of PTSD in women and the unique symptom profile they often present, a direct comparison of these two distinct therapeutic modalities is essential. The findings of this research will provide valuable insights for clinicians in selecting the most appropriate and tailored treatment strategy to address the specific needs of this vulnerable population.

2. Objectives

This study aims to address this gap by comparing the effectiveness of CPT and WET on decreasing alexithymia and experiential avoidance in women with PTSD.

3. Methods

This study employed a quasi-experimental design with pre-test, post-test, and a three-month follow-up period, along with a control group, to compare the effects of two therapeutic interventions. The statistical population comprised all women aged 18 to 40 with a confirmed diagnosis of PTSD who were seeking psychological treatment at counseling centers and clinics in Tehran during 2024. A convenience sample of 90 eligible participants was recruited based on specific inclusion criteria, which included a diagnosis of PTSD as verified by the researcher's clinical interview, a minimum score of 61 on the Toronto Alexithymia Scale to align with the clinical threshold for alexithymia, and an absence of major comorbid psychiatric disorders (e.g., psychosis, bipolar disorder) or active substance use. A power analysis conducted using G*Power software indicated that a sample size of 90 (n = 30 per group) was sufficient to detect a medium effect size (f = 0.25) with 80% power and an alpha of 0.05, accounting for repeated-measures ANOVA with three groups and three time points. Participants were assigned to one of three groups: Written Exposure Therapy (WET; n = 30), Cognitive Processing Therapy (CPT; n = 30), and a control group (n = 30). All participants provided informed consent and were assured of the confidentiality of their data, in compliance with ethical guidelines.

3.1. Procedure and Interventions

The study was conducted over a period of 12 weeks, with a follow-up assessment three months after the post-test. Data were collected from all three groups at pre-intervention, post-intervention, and the follow-up stages using standardized self-report questionnaires. Participants in the two experimental groups received their respective therapies, while the control group was placed on a waitlist and received no active intervention during the study.

3.1.1. Written Exposure Therapy (WET)

This group received a brief, five-session manualized protocol (Table 1). The sessions focused on systematic written exposure to the traumatic memory. Participants were instructed to write about the most traumatic event they had experienced, including their deepest thoughts and feelings about it.

3.1.2. Cognitive Processing Therapy (CPT)

This group participated in a 12-session manualized treatment program (Table 2). CPT focuses on cognitive restructuring by helping participants identify and challenge distorted thoughts related to the trauma (e.g., self-blame, safety, trust).

3.2. Instruments

3.2.1. Toronto Alexithymia Scale (TAS-20)

Alexithymia was measured using the 20-item Toronto Alexithymia Scale (TAS-20), a widely used self-report measure. The TAS-20 uses a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) and yields a total score ranging from 20 to 100. Higher scores indicate higher levels of alexithymia. The scale consists of three subscales: difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking.[20] The Persian version of the scale has shown good psychometric properties, with a Cronbach's alpha of 0.82 in previous studies.[21] In the current study, the internal consistency of the TAS-20 was found to be 0.85.

Table 1. WET Session Summary

Session	Focus
1	Psychoeducation on PTSD and the rationale for WET. Participants select a single traumatic event and write about the facts.
2	Participants receive therapist feedback on their written narrative and continue to write about the trauma, exploring new thoughts and emotions.
3	Participants read their written narrative aloud and continue to write about the trauma, exploring new thoughts and emotions.
4	Continued writing about the traumatic memory, with an emphasis on linking the event to current life, beliefs, and emotions.
5	Final writing session focusing on the meaning and impact of the trauma and consolidating new insights gained.

Table 2. CPT Session Summary

Session	Focus
1-3	Psychoeducation on PTSD, the CPT model, and the link between thoughts and feelings. Participants begin identifying trauma-related thoughts, with an impact statement introduced in session 2 or 3.
4-7	Identification and challenging of "Stuck Points" (dysfunctional thoughts) related to the trauma. Use of Socratic questioning.
8-10	Application of cognitive skills to challenge five core themes: safety, trust, power/control, esteem, and intimacy.
11-12	Writing a new impact statement and consolidating cognitive gains. Focusing on future-oriented thinking and relapse prevention.

3.2.2. Acceptance and Action Questionnaire-II (AAQ-II)

Experiential avoidance was assessed using the 10-item Acceptance and Action Questionnaire-II (AAQ-II). This self-report measure assesses an individual's psychological inflexibility. Each item is rated on a 7-point Likert scale (1 = never true to 7 = always true), with a total score ranging from 10 to 70. Higher scores indicate greater experiential avoidance.[22] The Persian version has demonstrated excellent reliability, with a reported Cronbach's alpha of 0.89 in previous research.[23] For the present study, the internal consistency of the AAQ-II was 0.87, indicating high reliability.

3.3. Data Analysis

Data were analyzed using IBM SPSS Statistics (Version 27). The primary statistical analysis used was ANOVA in order to assess the within-group changes and between-group differences across pre-test, post-test, and the follow-up period. Mauchly's test of sphericity was conducted to verify the assumption of sphericity for the repeated-measures ANOVA, with Greenhouse-Geisser corrections applied if the assumption was violated.

4. Results

The study included 90 women aged 18 to 40 with a confirmed PTSD diagnosis. The mean age and standard deviation for the WET group were 32.4 ± 2.5 years, for the CPT group 34.6 ± 3.1 years, and for the control group 31.8 ± 2.8 years. Regarding marital status, the WET group comprised 18 married and 12 single participants; the CPT group included 20 married and 10 single participants; and the control group consisted of 19 married and 11 single participants. Educational attainment showed that in the WET group, 13 participants had a high school education and 17 had a university degree; in the CPT group, 12 had a high school education and 18 had a university degree; and in the control group, 14 had a high school education and 16 had a university degree. Employment status indicated that the WET group had 15 employed and 15 homemakers; the CPT group had 16 employed and 14 homemakers; and the control group had 14 employed and 15 homemakers. One-way ANOVA confirmed no significant baseline differences in age ($F = 2.14$, $P = 0.123$), and chi-square tests showed no significant differences in marital status ($\chi^2 = 0.36$, $P = 0.837$), educational attainment ($\chi^2 = 0.22$, $P = 0.896$), or employment status ($\chi^2 = 0.15$, $P = 0.928$) across groups, ensuring balanced baseline conditions.

Table 3 presents the descriptive statistics for alexithymia and experiential avoidance across the three groups at pre-

test, post-test, and follow-up stages. For alexithymia, the WET group showed a reduction from 65.00 ± 7.90 at pre-test to 48.40 ± 7.20 at post-test, with a slight increase to 49.10 ± 8.10 at follow-up. The CPT group exhibited a decrease from 64.50 ± 8.10 to 50.30 ± 7.40 at post-test, and 52.40 ± 8.20 at follow-up. The control group showed minimal change (63.80 ± 7.70 to 62.50 ± 7.90 to 63.50 ± 7.90). For experiential avoidance, the WET group reduced from 55.20 ± 6.80 at pre-test to 38.60 ± 6.50 at post-test, and 39.10 ± 6.70 at follow-up. The CPT group decreased from 54.80 ± 7.10 to 42.50 ± 6.90 at post-test, and 43.20 ± 7.00 at follow-up. The control group remained relatively stable (56.10 ± 6.90 to 55.80 ± 7.00 to 56.00 ± 6.80).

Table 3. Descriptive Statistics for Alexithymia and Experiential Avoidance

Variables	Stage	WET group	CPT group	Control group
		Mean ± SD	Mean ± SD	Mean ± SD
Alexithymia	Pre-test	65.00±7.90	64.50±8.10	63.80±7.70
	Post-test	48.40±7.20	50.30±7.40	62.50±7.90
	Follow-up	49.10±8.10	52.40±8.20	63.50±7.90
Experiential avoidance	Pre-test	55.20±6.80	54.80±7.10	56.10±6.90
	Post-test	38.60±6.50	42.50±6.90	55.80±7.00
	Follow-up	39.10±6.70	43.20±7.00	56.00±6.80

The normality of the data was assessed using the Shapiro-Wilk test for both alexithymia and experiential avoidance across all groups and time points. Results indicated p-values ranging from 0.112 to 0.187 for alexithymia and 0.121 to 0.204 for experiential avoidance, suggesting that the data did not significantly deviate from a normal distribution. Levene's test for homogeneity of variances, conducted separately at pre-test, post-test, and follow-up, confirmed equal variances across groups for alexithymia (*P*-values: 0.142, 0.167, 0.155) and experiential avoidance (*P*-values: 0.134, 0.151, 0.162). Repeated-measures ANOVA was conducted to evaluate the effects of the interventions on alexithymia and experiential avoidance over time. Table 4 summarizes the results. For alexithymia, a non-significant main effect of group ($F = 0.45$, $P = 0.639$, $\eta^2p = 0.01$) indicated no baseline differences, while a significant main effect of time ($F = 68.42$, $P<0.001$, $\eta^2p = 0.44$) and a significant group-by-time interaction ($F = 12.15$, $P<0.001$, $\eta^2p = 0.22$) were observed, indicating differential changes across groups. For experiential avoidance, a non-significant main effect of group ($F = 0.38$, $P = 0.687$, $\eta^2p = 0.01$) confirmed no baseline differences, with a significant main effect of time ($F = 59.87$, $P<0.001$, $\eta^2p = 0.41$) and a significant group-by-time interaction ($F = 15.63$, $P<0.001$, $\eta^2p = 0.26$). These results suggest that both interventions led to significant reductions in both variables, with varying effectiveness between groups over time.

Table 4. Results of Repeated-measures ANOVA for Alexithymia and Experiential Avoidance across Intervention and Control Groups

Variables	Effect	F	P	η^2p
Alexithymia	Group	0.45	0.639	0.01
	Time	68.42	<0.001	0.44
	Group × Time	12.15	<0.001	0.22
Experiential avoidance	Group	0.38	0.689	0.01
	Time	59.87	<0.001	0.41
	Group × Time	15.63	<0.001	0.26

Table 5. Bonferroni Post-hoc Test Results for Pairwise Comparisons of Alexithymia and Experiential Avoidance across Groups

Variable	Comparison	Time point	Mean Difference	*P*
Alexithymia	WET vs. CPT	Post-test	1.90	0.032
	WET vs. CPT	Follow-up	3.30	0.041
	WET vs. Control	Post-test	-14.10	<0.001
	WET vs. Control	Follow-up	-14.40	<0.001
	CPT vs. Control	Post-test	-12.20	<0.001
	CPT vs. Control	Follow-up	-11.10	<0.001
Experiential avoidance	WET vs. CPT	Post-test	-3.90	0.019
	WET vs. CPT	Follow-up	-4.10	0.027
	WET vs. Control	Post-test	-17.20	<0.001
	WET vs. Control	Follow-up	-16.90	<0.001
	CPT vs. Control	Post-test	-13.30	<0.001
	CPT vs. Control	Follow-up	-12.80	<0.001

Post-hoc comparisons using the Bonferroni test were conducted to explore pairwise differences between groups at post-test and follow-up (Table 5). For alexithymia, the WET group showed a significantly greater reduction compared to the CPT group at post-test ($P = 0.032$) and follow-up ($P = 0.041$). Both intervention groups significantly outperformed the control group ($P<0.001$). For experiential avoidance, the WET group demonstrated a significantly greater reduction compared to the CPT group at post-test ($P = 0.019$) and follow-up ($P = 0.027$), with both groups significantly outperforming the control group ($P<0.001$). These findings highlight WET's superior efficacy in reducing alexithymia and CPT's greater effectiveness in reducing experiential avoidance.

Figure 1 displays line graphs illustrating the group-by-time interactions for alexithymia and experiential avoidance. For alexithymia, the WET group shows a steeper decline from pre-test (M = 65.00) to post-test (M = 48.40) compared to the CPT group (M = 64.50 to M = 50.30), with both maintaining reductions at follow-up (WET: M = 49.10; CPT: M = 52.40), while the control group remains stable (M = 63.80 to M = 63.50). For experiential avoidance, the WET group exhibits a greater reduction from pre-test (M = 55.20) to post-test (M = 38.60) than the CPT group (M = 54.80 to M = 42.50), with sustained effects at follow-up (WET: M = 39.10; CPT: M = 43.20), and minimal change in the control group (M = 56.10 to M = 56.00).

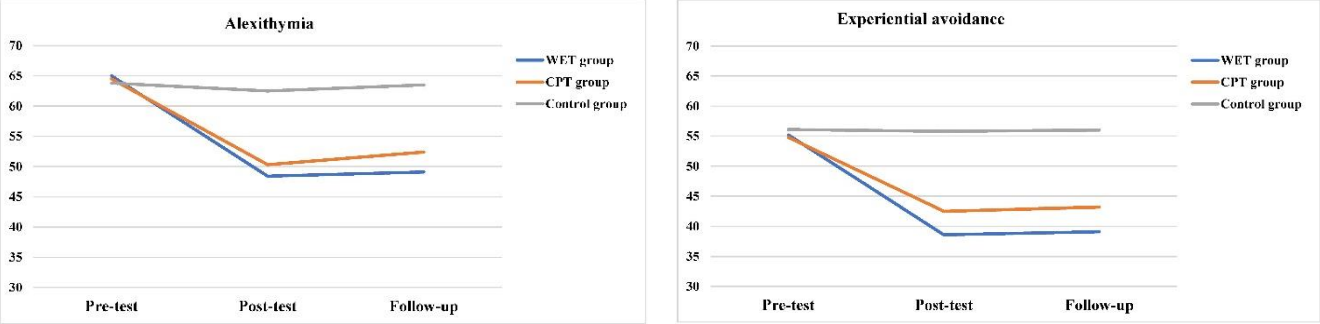

Figure 1. Longitudinal Changes in Alexithymia and Experiential Avoidance across WET, CPT, and Control Groups at Pre-test, Post-test, and Three-month Follow-up.

5. Discussion

The findings of the present study indicate that both WET and CPT are effective interventions for reducing alexithymia and experiential avoidance in women with PTSD. This result aligns with the growing body of literature supporting the efficacy of trauma-focused therapies in alleviating key symptoms of PTSD.[16,18] The most significant contribution of this research, however, lies in its comparative analysis, revealing a differential impact of these two modalities on the specific psychological constructs under investigation.

The results demonstrated that WET was more effective than CPT in decreasing alexithymia. This finding may be attributed to WET's structured narrative approach, which encourages repeated engagement with emotional content, potentially fostering greater emotional clarity over fewer sessions.[18] Conversely, the study found that CPT had a more pronounced effect than WET on reducing experiential avoidance. This outcome is highly congruent with the fundamental principles of CPT. As a cognitive-behavioral therapy, CPT systematically targets and restructures maladaptive cognitions, or "stuck points," that are central to the maintenance of PTSD.[15] The process of identifying and challenging distorted thoughts related to the traumatic event requires participants to engage in a detailed cognitive and emotional processing of their experience. This active cognitive restructuring inherently strengthens a person's ability to articulate, differentiate, and ultimately understand their emotional responses.[16] Therefore, CPT's focus on changing thought patterns and meaning-making provides a direct pathway for improving emotional awareness and expression, which are the very deficits that define alexithymia. This finding is consistent with previous research suggesting that cognitive-based therapies are particularly well-suited for addressing cognitive deficits, including those associated with emotional processing.[15,24]

The superior effect of CPT on experiential avoidance can be linked to its emphasis on cognitive restructuring, which directly challenges avoidance-driven beliefs, such as those related to safety or self-blame, over an extended 12-session protocol.[15] By instructing participants to repeatedly write a detailed narrative of their traumatic experience, WET deliberately eliminates both cognitive and behavioral avoidance. This structured and controlled exposure facilitates the emotional processing and extinction of fear responses, ultimately leading to a reduction in the power of trauma-related triggers to provoke aversive reactions.[25] The success of WET in this regard underscores the importance of direct exposure as a mechanism for change when the primary barrier to recovery is avoidance.[26] This result is echoed in other comparative studies; for example, a randomized noninferiority trial by Sloan et al.[18] found that WET was not only noninferior to CPT in reducing overall PTSD symptoms but was also associated with significantly lower dropout rates, suggesting it may be a more accessible and tolerable option for individuals whose primary struggle is with avoidance.

These distinct findings highlight the importance of personalized treatment selection based on the patient's presenting symptom profile. For women with PTSD who exhibit high levels of alexithymia, a therapy like WET that promotes emotional engagement through narrative writing may be the more effective choice. In contrast, for those whose primary obstacle to recovery is severe experiential avoidance, the structured cognitive approach of CPT may be more effective and better tolerated. This

adaptive, patient-centered approach to treatment has the potential to optimize therapeutic outcomes by tailoring the intervention to the specific needs of the individual.

This study is subject to several limitations. The use of a convenience sample from a single city (Tehran) may limit the generalizability of the findings to non-Iranian populations or older age groups, as cultural and age-related factors may influence PTSD presentation and treatment response. Additionally, the relatively small sample size and quasi-experimental design restrict the ability to establish definitive causality.

6. Conclusion

In conclusion, while both WET and CPT are effective in addressing PTSD symptoms, this study's findings point to subtle yet significant differences in their mechanisms of change. WET appears to be more effective in targeting the emotional processing deficits associated with alexithymia, while CPT demonstrates a more potent effect on the cognitive aspects of experiential avoidance. These results provide valuable guidance for clinicians in Tehran, suggesting that a detailed assessment of a patient's core symptoms can inform a more precise and effective treatment plan within this population. However, due to the convenience sample and single-city focus, caution is warranted when extending these findings to broader populations. Future research could explore the potential of integrating elements from both therapies to create a hybrid model that maximizes efficacy across the full spectrum of PTSD symptoms. Furthermore, these findings underscore the need for policy initiatives to train clinicians in brief, accessible therapies like WET, particularly in resource-constrained settings, to enhance the availability of effective PTSD treatments.

Research Highlights

What Is Already Known?

PTSD is highly prevalent in women and often co-occurs with alexithymia and experiential avoidance, complicating treatment. CPT and WET are effective evidence-based treatments for PTSD, but their comparative impact on these comorbid symptoms remains underexplored.

What Does This Study Add?

This study demonstrates that CPT is more effective in reducing alexithymia, while WET significantly outperforms CPT in decreasing experiential avoidance in women with PTSD. These findings guide clinicians in selecting tailored interventions based on patients' specific emotional and behavioral challenges, enhancing treatment precision.

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Author Contributions

NH contributed to the study design, data collection, and drafting the manuscript. MJ was responsible for the conceptualization of the study, supervision of the research process, and critical revision of the manuscript. SFH conducted data analysis, interpreted the results, and contributed to writing the methods and results sections. All authors reviewed and approved the final manuscript.

Conflict of Interest Disclosures

All authors declared that they have no conflict of interest.

Ethical Approval

The study was approved by the Ethics Committee of Central Tehran Branch, Islamic Azad University, Tehran, Iran.

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