

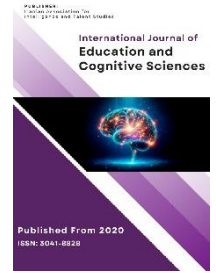


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The Effectiveness of Short-Term Object Relations Therapy on the Severity of Cognitive Fatigue in Patients with Multiple Sclerosis (MS): A Randomized Clinical Trial

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ABSTRACT

Purpose: The present study aimed to determine the effectiveness of short-term object relations therapy in reducing the severity of cognitive fatigue among patients with Multiple Sclerosis (MS).

Methods and Materials: This study employed an applied, quantitative design using a randomized quasi-experimental pretest–posttest structure with a control group and a three-month follow-up phase. The statistical population included patients diagnosed with MS who were referred to healthcare centers in Isfahan during 2025–2026. A total of 36 participants were selected through convenience sampling and randomly assigned to an experimental group ($n = 18$) and a control group ($n = 18$). The experimental group received short-term object relations group therapy based on a structured 14-session protocol delivered over seven weeks, while the control group received no intervention. Data were collected using the Fatigue Severity Scale at three time points: pretest, posttest, and follow-up. Statistical analyses were conducted using SPSS version 29, including descriptive statistics, Kolmogorov–Smirnov and Levene’s tests for assumptions, and repeated measures analysis of variance (ANOVA) and covariance (ANCOVA) where necessary.

Findings: The results of repeated measures ANOVA indicated a significant main effect of group ($F = 34.55, p < 0.001, \eta^2 = 0.504$), a significant main effect of time ($F = 41.69, p < 0.001, \eta^2 = 0.551$), and a significant interaction effect between time and group ($F = 73.93, p < 0.001, \eta^2 = 0.685$) on cognitive fatigue severity. Bonferroni post hoc comparisons revealed significant reductions in cognitive fatigue from pretest to posttest ($p < 0.001$) and from pretest to follow-up ($p < 0.001$), as well as a smaller but significant difference between posttest and follow-up ($p = 0.037$) in the experimental group.

Conclusion: Short-term object relations therapy is an effective intervention for reducing cognitive fatigue in patients with MS, producing significant and sustained improvements that highlight the importance of addressing emotional and relational processes in the management of fatigue-related symptoms.

Keywords: Multiple Sclerosis, Cognitive Fatigue, Object Relations Therapy, Psychodynamic Intervention, Randomized Clinical Trial

1. Introduction

Cognitive fatigue is widely recognized as one of the most debilitating and pervasive symptoms among patients with neurological disorders, particularly those diagnosed with Multiple Sclerosis (MS). Unlike physical fatigue, cognitive fatigue refers to a subjective sense of mental exhaustion that emerges during or after prolonged cognitive activity and is associated with diminished attention, slower information processing, and reduced executive functioning. Early conceptualizations defined cognitive fatigue within attentional network frameworks, emphasizing its role in disrupting sustained attention and cognitive control processes (Holtzer et al., 2010). Subsequent research has further highlighted that cognitive fatigue is not merely a transient state but a multidimensional construct involving neurobiological, psychological, and environmental components (Zeidi & Shariat, 2023). In the context of MS, fatigue has been identified as one of the most common and disabling symptoms, affecting up to 80% of patients and significantly impairing their quality of life, occupational functioning, and social participation (Krupp & Elkins, 2000). Importantly, cognitive fatigue in MS is not always proportional to disease severity or physical disability, suggesting the involvement of complex psychological and neurocognitive mechanisms.

The clinical significance of cognitive fatigue extends beyond its immediate cognitive consequences, as it is closely linked to emotional dysregulation, psychological distress, and reduced adaptive functioning. Empirical evidence indicates that cognitive fatigue can exacerbate deficits in cognitive flexibility and decision-making processes, thereby limiting individuals' capacity to cope effectively with daily demands (Rafiei & Mikaeili, 2019). Moreover, studies have demonstrated that prolonged cognitive effort can intensify both mental and physical fatigue, leading to a cyclical pattern of exhaustion and reduced performance (Dailey et al., 2015). In chronic conditions such as fibromyalgia and MS, fatigue is often accompanied by persistent pain, emotional distress, and maladaptive coping strategies, further complicating clinical management (Rostami et al., 2024). These findings underscore the necessity of addressing cognitive fatigue not only as a neurological symptom but also as a psychological and behavioral phenomenon requiring comprehensive intervention approaches.

Recent research has increasingly emphasized the role of emotional and interpersonal processes in the development and maintenance of cognitive fatigue. For instance,

cognitive fatigue has been found to be associated with difficulties in emotion regulation, particularly in contexts requiring sustained cognitive engagement (Mayordomo et al., 2024). Individuals who struggle with identifying and managing their emotions are more likely to experience heightened levels of fatigue, suggesting that underlying psychological vulnerabilities may contribute to fatigue severity. This perspective aligns with broader psychosomatic models, which conceptualize fatigue as a product of interactions between physiological processes and psychological dynamics. Within this framework, constructs such as alexithymia, emotional suppression, and maladaptive interpersonal patterns have been identified as key factors influencing fatigue experiences (Sarлак, 2024). Therefore, interventions targeting emotional awareness and interpersonal functioning may hold promise in reducing cognitive fatigue in clinical populations.

Object relations theory offers a valuable theoretical lens for understanding the psychological underpinnings of cognitive fatigue. Rooted in psychodynamic traditions, this theory posits that early relational experiences shape internalized representations of self and others, which in turn influence emotional regulation, interpersonal behavior, and psychological resilience. According to contemporary formulations, disturbances in object relations can lead to maladaptive patterns of relating, impaired affect regulation, and increased vulnerability to psychological distress (Caligor et al., 2023). These maladaptive internal representations may contribute to chronic stress and emotional dysregulation, which are known to exacerbate fatigue symptoms. Furthermore, object relations theory emphasizes the role of unconscious processes and relational dynamics in shaping individuals' responses to stress, suggesting that therapeutic interventions addressing these processes may lead to meaningful improvements in psychological functioning (Summers, 2024).

Empirical studies have provided growing support for the relevance of object relations constructs in various clinical conditions. For example, research has demonstrated significant associations between impaired object relations and increased levels of anxiety, emotional dysregulation, and psychosomatic symptoms (Zarrati et al., 2020). In patients with chronic illnesses, dysfunctional object relations have been linked to difficulties in coping with illness-related stress and increased symptom severity. Moreover, object relations have been shown to play a mediating role in the relationship between psychological factors and physical symptoms, highlighting their importance in integrated

models of health (Omidi Cheshmeh Kabood et al., 2025). These findings suggest that interventions targeting object relations may have broad therapeutic effects, including the reduction of fatigue and improvement of emotional well-being.

Short-term object relations therapy has emerged as an effective intervention for addressing maladaptive relational patterns and enhancing emotional regulation within a relatively brief therapeutic timeframe. This approach focuses on identifying and modifying dysfunctional internal representations through techniques such as clarification, confrontation, and interpretation, while maintaining a strong therapeutic alliance. Evidence indicates that short-term object relations therapy can lead to significant improvements in self-awareness, emotional processing, and interpersonal functioning across various clinical populations (Sarлак & Talebi, 2025). In addition, studies have shown that this therapeutic approach can effectively reduce symptoms of anxiety, alexithymia, and personality-related dysfunctions, which are closely مرتبط with fatigue experiences (Sarлак & Talebi, 2024). The group-based format of this intervention further enhances its effectiveness by providing opportunities for interpersonal learning and mutual support among participants.

Several recent studies have specifically examined the impact of object relations-based interventions on psychological outcomes. For instance, short-term object relations group therapy has been found to significantly reduce symptoms of panic, obsessive-compulsive personality traits, and narcissistic tendencies, while simultaneously improving emotional insight and relational functioning (Sarлак & Talebi, 2024). Similarly, interventions grounded in object relations theory have demonstrated efficacy in enhancing self-concept and reducing perfectionism related to physical appearance in individuals with body dysmorphic disorder (Akbari & Talebi, 2025). Other research has highlighted the effectiveness of dynamic-interpersonal group psychotherapy in reducing thought suppression and improving cognitive-emotional integration in individuals with obsessive-compulsive disorder (Shafiqh & Talebi, 2024). Furthermore, mentalization-based group therapy, which shares conceptual overlap with object relations approaches, has been shown to improve emotion regulation and interpersonal functioning in individuals with personality disorders (Maleki et al., 2025). Collectively, these findings provide strong empirical support for the therapeutic potential of object relations-based interventions.

Despite the growing body of evidence supporting the effectiveness of object relations therapy, its application in the context of cognitive fatigue, particularly among patients with MS, remains relatively underexplored. Given the complex interplay between cognitive, emotional, and interpersonal factors in the تجربه of fatigue, there is a clear need for integrative interventions that address these dimensions simultaneously. Existing research suggests that interventions focusing solely on cognitive or physical aspects of fatigue may be insufficient to produce lasting improvements. Instead, approaches that incorporate psychodynamic and relational components may offer more comprehensive benefits by targeting underlying psychological mechanisms. In this regard, short-term object relations therapy represents a promising intervention for reducing cognitive fatigue through its emphasis on emotional awareness, relational patterns, and unconscious processes.

Furthermore, the importance of culturally and contextually adapted interventions cannot be overlooked. Studies conducted in diverse populations have highlighted the role of cultural factors in shaping emotional expression, interpersonal relationships, and responses to psychological interventions (Sarлак, 2024). Therefore, examining the effectiveness of object relations therapy within specific cultural contexts, such as among patients with MS in Iran, is essential for developing evidence-based, culturally sensitive treatment approaches. Additionally, the inclusion of follow-up assessments in clinical trials is crucial for evaluating the دوام effects of interventions and ensuring their long-term efficacy.

In light of the above considerations, the present study seeks to address a critical gap in the literature by investigating the effectiveness of short-term object relations therapy on the severity of cognitive fatigue in patients with Multiple Sclerosis. By integrating psychodynamic principles with a structured intervention protocol, this study aims to provide empirical evidence on the potential of this therapeutic approach to alleviate cognitive fatigue and improve psychological functioning in this population. Therefore, the aim of the present study is to determine the effectiveness of short-term object relations therapy on reducing the severity of cognitive fatigue in patients with Multiple Sclerosis (MS).

2. Methods and Materials

2.1. Study Design and Participants

The present study adopted an applied, quantitative approach using a quasi-experimental design with a pretest–posttest structure, including an experimental group, a control group, and a follow-up phase. The statistical population consisted of all individuals diagnosed with Multiple Sclerosis (MS), confirmed by a neurologist based on updated diagnostic criteria, who were referred to educational and healthcare centers in Isfahan during the 2025–2026 period. A total of 36 participants were selected through convenience sampling and randomly assigned to two groups: an experimental group ($n = 18$) and a control group ($n = 18$). Random assignment ensured equal probability of allocation to each group. Both groups were assessed at baseline using a pretest prior to the intervention. The experimental group then received short-term object relations therapy, whereas the control group did not receive any psychological intervention. After completion of the intervention, both groups were reassessed using a posttest, and a follow-up assessment was conducted three months later to evaluate the stability of treatment effects. The sample size was determined using G*Power software with an alpha level of 0.05, statistical power of 0.90, and an effect size of 0.25. Inclusion criteria comprised an age range of 20 to 50 years, confirmed diagnosis of MS within the past five years, stable clinical condition with no relapse during the previous three months, adequate literacy and cognitive capacity to understand and complete questionnaires, absence of severe psychiatric disorders such as active psychosis or substance dependence, and willingness to participate with informed consent. Exclusion criteria included unstable medical or neurological condition, presence of severe psychiatric disorders, concurrent participation in other psychological interventions within the past six months, absence from more than two consecutive therapy sessions, and withdrawal or non-compliance with study procedures.

2.2. Measures

The primary instrument used for data collection was the Fatigue Severity Scale (FSS), developed by Krupp (1989) to assess fatigue severity in patients with Multiple Sclerosis. This scale consists of nine items that evaluate the impact of fatigue on daily functioning and cognitive performance. Each item is rated on a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The total score is

obtained by summing responses to all items, resulting in a score range from 9 to 63, with higher scores indicating greater severity of fatigue. The scale allows for interpretation across levels of fatigue intensity, including mild, moderate, and severe fatigue. Previous validation studies conducted on Persian-speaking MS populations have demonstrated strong discriminant validity, indicating that the scale effectively distinguishes between clinical fatigue and normal fatigue levels. Reliability of the instrument has been confirmed using Cronbach's alpha, with a coefficient of 0.96, reflecting excellent internal consistency. In the present study, the FSS was administered at three time points: prior to the intervention, immediately after completion of the intervention, and at the three-month follow-up stage, allowing for assessment of both immediate and sustained effects of the therapeutic intervention on cognitive fatigue.

2.3. Intervention

The intervention implemented in this study was short-term object relations therapy based on the protocol developed by Strupp (2009), delivered in a group format. The therapeutic program consisted of 14 sessions conducted over approximately seven weeks, with two sessions per week, each lasting 45 minutes. The intervention was structured into four phases: an initial phase, two middle phases, and a termination phase. During the initial phase, participants were assessed for suitability for short-term psychodynamic therapy, a therapeutic focus was established, and a working therapeutic alliance was formed. Patients were also introduced to the principles of object relations theory, and a brief clinical and personal history was obtained. In the first middle phase, therapeutic work focused on the application of core psychodynamic techniques such as clarification, confrontation, and interpretation, with the aim of identifying unconscious conflicts and linking presenting symptoms to underlying relational patterns. The second middle phase allowed for selective integration of complementary techniques, including relaxation exercises and structured daily activity recording, when these were considered beneficial for facilitating therapeutic engagement and symptom relief. This phase also included preparation for termination of therapy. The final phase focused on consolidation of therapeutic gains, processing of emotions related to separation and termination, and internalization of therapeutic insights. Indicators of successful completion included improved emotional regulation, enhanced interpersonal functioning, greater insight into relational

patterns, and increased ability to manage stress. Intervention fidelity was ensured through expert validation by a neurologist, academic supervisors, and a clinical supervisor, as well as systematic monitoring using structured session checklists. Inter-rater agreement assessed using Kendall's tau across three independent observers ranged from 0.95 to 0.98, indicating a high level of adherence to the treatment protocol.

2.4. Data Analysis

Data were analyzed using both descriptive and inferential statistical methods. Descriptive statistics included frequency, percentage, mean, and standard deviation to summarize participant characteristics and study variables. Inferential analysis involved testing statistical assumptions and evaluating the effects of the intervention. The Kolmogorov–Smirnov test was used to assess the normality of data distribution, and Levene's test was applied to examine homogeneity of variances. To evaluate changes across time and between groups, repeated measures analysis of variance (ANOVA) was employed due to the presence of pretest, posttest, and follow-up measurements. In cases where pretest scores had a significant influence on the outcomes, analysis of covariance (ANCOVA) was used to control for baseline differences. All statistical analyses were conducted using SPSS version 29, with the level of statistical significance set at $p < 0.05$.

Table 1

Descriptive Statistics of Cognitive Fatigue Severity by Group Across Measurement Stages

Variable	Experimental Group Mean	Experimental Group SD	Control Group Mean	Control Group SD
Pretest Cognitive Fatigue	22.44	1.72	22.61	1.50
Posttest Cognitive Fatigue	18.11	2.27	23.00	1.61
Follow-up Cognitive Fatigue	18.56	2.25	23.50	1.72

The descriptive statistics indicate that at the pretest stage, the mean cognitive fatigue scores were relatively similar between the experimental group ($M = 22.44$, $SD = 1.72$) and the control group ($M = 22.61$, $SD = 1.50$), suggesting comparable baseline conditions. However, at the posttest stage, the experimental group showed a substantial reduction in cognitive fatigue ($M = 18.11$, $SD = 2.27$), whereas the control group exhibited a slight increase ($M = 23.00$, $SD = 1.61$). This trend remained stable at the follow-up stage, where the experimental group maintained lower fatigue levels ($M = 18.56$, $SD = 2.25$), while the control group

3. Findings and Results

The demographic characteristics of participants indicated a relatively balanced distribution between the experimental and control groups. In terms of age, in the short-term object relations therapy group, 29.4% of participants were under 30 years, while 35.3% were in the 31–40 age range and 35.3% were between 41 and 50 years; in the control group, 22.2% were under 30 years, 38.9% were aged 31–40 years, and 38.9% were between 41 and 50 years. The mean age in the experimental group was 35.647 ± 8.587 years, compared to 36.944 ± 7.658 years in the control group, and the chi-square test indicated no significant difference between groups ($\chi^2 = 2.370$, $p = 0.888$). Regarding gender distribution, 41.2% of participants in the experimental group were male and 58.8% were female, whereas in the control group, males and females each constituted 50.0% of the sample; this difference was not statistically significant ($\chi^2 = 0.274$, $p = 0.600$). In terms of educational level, 47.1% of participants in the experimental group had a diploma or lower level of education, 35.3% had an associate or bachelor's degree, and 17.6% held a master's degree or higher; in the control group, these proportions were 38.9%, 38.9%, and 22.2%, respectively. The chi-square test again showed no significant difference between the groups in educational attainment ($\chi^2 = 0.258$, $p = 0.879$), indicating that the two groups were homogeneous in terms of key demographic variables prior to the intervention.

continued to show higher levels ($M = 23.50$, $SD = 1.72$), indicating sustained effects of the intervention.

Prior to conducting the main inferential analyses, the statistical assumptions underlying repeated measures ANOVA were examined. The normality of the distribution of cognitive fatigue scores at each measurement stage (pretest, posttest, and follow-up) was assessed using the Kolmogorov–Smirnov test, and the results indicated that all distributions were not significantly different from normal ($p > 0.05$). Homogeneity of variances between the experimental and control groups was evaluated using Levene's test, which showed no significant differences

across groups at any measurement point ($p > 0.05$), confirming equality of variances. Additionally, the assumption of sphericity for within-subject comparisons was examined, and given the repeated measurement structure,

appropriate corrections were considered where necessary. Overall, the results confirmed that the data met the required assumptions for applying repeated measures ANOVA, allowing for valid interpretation of the subsequent analyses.

Table 2

Results of Between-Subjects and Within-Subjects Effects for Cognitive Fatigue

Variable	Effect Type	Source	Sum of Squares	df	Mean Square	F	p	η^2	Power
Cognitive Fatigue	Between-Subjects	Group	300.00	1	300.00	34.55	< 0.001	0.504	1.000
	Within-Subjects	Time	76.35	2	38.17	41.69	< 0.001	0.551	1.000
		Time \times Group	135.38	2	67.69	73.93	< 0.001	0.685	1.000

The inferential analysis using repeated measures ANOVA revealed significant effects for all examined sources. The between-subjects effect of group was statistically significant ($F = 34.55$, $p < 0.001$, $\eta^2 = 0.504$), indicating a meaningful difference between the experimental and control groups in cognitive fatigue levels. The within-subjects effect of time was also significant ($F = 41.69$, $p < 0.001$, $\eta^2 = 0.551$), demonstrating changes in fatigue levels

across measurement stages. Most importantly, the interaction effect between time and group was significant ($F = 73.93$, $p < 0.001$, $\eta^2 = 0.685$), suggesting that the pattern of change over time differed significantly between the two groups, with the experimental group showing a marked reduction in cognitive fatigue compared to the control group. The large effect sizes and statistical power values indicate strong and reliable findings.

Table 3

Bonferroni Post Hoc Test Results for Pairwise Comparisons in the Experimental Group

Variable	Stage Comparison	Mean Difference	SD	p
Cognitive Fatigue	Pretest vs Posttest	1.97	0.25	< 0.001
	Pretest vs Follow-up	1.50	0.24	< 0.001
	Posttest vs Follow-up	-0.47	0.18	0.037

The Bonferroni post hoc test results for the experimental group indicate significant differences between measurement stages. There was a statistically significant reduction in cognitive fatigue from pretest to posttest (mean difference = 1.97, $p < 0.001$), as well as from pretest to follow-up (mean difference = 1.50, $p < 0.001$), confirming the effectiveness of the intervention over time. Additionally, a small but statistically significant difference was observed between posttest and follow-up (mean difference = -0.47, $p = 0.037$), suggesting a slight increase in fatigue levels after the intervention, although the overall reduction remained substantial compared to baseline. These findings indicate that the intervention led to both immediate and relatively stable improvements in cognitive fatigue among participants in the experimental group.

4. Discussion and Conclusion

The present study aimed to evaluate the effectiveness of short-term object relations therapy on the severity of

cognitive fatigue in patients with Multiple Sclerosis (MS). The findings demonstrated that the intervention led to a significant reduction in cognitive fatigue in the experimental group compared to the control group across posttest and follow-up stages. The descriptive results indicated that while both groups were comparable at baseline, the experimental group exhibited a marked decrease in fatigue scores after the intervention, and this improvement was largely maintained at the three-month follow-up. The inferential analysis further confirmed these observations, revealing significant main effects of group and time, as well as a significant interaction effect between time and group. The magnitude of effect sizes and high statistical power suggest that the intervention had a robust and clinically meaningful impact on cognitive fatigue.

The significant reduction in cognitive fatigue observed in the experimental group can be understood in light of the theoretical and therapeutic mechanisms underlying short-term object relations therapy. From a psychodynamic perspective, this intervention focuses on identifying and modifying maladaptive internal representations of self and

others, which are rooted in early relational experiences and contribute to emotional dysregulation and psychological distress (Caligor et al., 2023; Summers, 2024). Cognitive fatigue in MS is not solely a neurological symptom but is influenced by emotional and psychological factors, including stress, unresolved conflicts, and impaired emotion regulation. By addressing these underlying dynamics, object relations therapy may reduce the psychological burden that contributes to fatigue, thereby enhancing cognitive functioning and mental energy.

The results of this study are consistent with prior research emphasizing the multidimensional nature of cognitive fatigue and its ارتباط with psychological variables. For instance, cognitive fatigue has been associated with deficits in attention, executive functioning, and emotional regulation, which can exacerbate feelings of mental exhaustion (Holtzer et al., 2010; Mayordomo et al., 2024). In the present study, the reduction in fatigue may reflect improvements in participants' ability to regulate emotions, process interpersonal experiences, and manage stress more effectively. This interpretation is supported by findings indicating that interventions targeting emotional and cognitive processes can significantly influence fatigue outcomes (Zeidi & Shariat, 2023). Moreover, the sustained improvement observed at follow-up suggests that the therapeutic changes were internalized and maintained over time, which is consistent with the goals of object relations therapy.

Another important finding of this study is the stability of treatment effects at the follow-up stage. Although a slight increase in fatigue scores was observed between posttest and follow-up in the experimental group, the overall level of fatigue remained significantly lower than baseline. This pattern suggests that while some degree of symptom fluctuation is طبيعي in chronic conditions such as MS, the intervention provided participants with enduring psychological resources that helped them manage fatigue more effectively. This finding aligns with previous studies demonstrating that psychodynamic interventions can produce lasting changes in psychological functioning by promoting insight, emotional awareness, and adaptive coping strategies (Sarlak & Talebi, 2025). The ability to maintain therapeutic gains over time is particularly important in the context of chronic بیماری, where long-term management is essential.

The effectiveness of short-term object relations therapy observed in this study is also supported by a growing body of empirical research demonstrating its impact on various

psychological outcomes. For example, studies have shown that this therapeutic approach can significantly improve self-awareness, reduce social anxiety, and decrease alexithymia in clinical populations (Sarlak & Talebi, 2025). Similarly, object relations-based interventions have been found to enhance self-concept and reduce maladaptive perfectionism in individuals with body dysmorphic disorder (Akbari & Talebi, 2025). These outcomes are particularly relevant to cognitive fatigue, as they reflect improvements in emotional processing and interpersonal functioning, which are closely linked to fatigue experiences. Furthermore, research on dynamic-interpersonal psychotherapy has demonstrated its effectiveness in reducing maladaptive cognitive processes such as thought suppression, which may contribute to mental exhaustion (Shafiqh & Talebi, 2024).

In addition, the findings of the present study can be interpreted in the context of research on psychosomatic and chronic conditions. Studies have shown that fatigue in conditions such as fibromyalgia and MS is often influenced by psychological factors, including stress, emotional distress, and maladaptive coping mechanisms (Rostami et al., 2024). Object relations therapy, by addressing these factors, may help reduce the overall symptom burden and improve patients' quality of life. Moreover, the role of object relations in mediating the relationship between psychological variables and physical symptoms has been highlighted in previous research, suggesting that improvements in relational functioning can have broader health benefits (Omidi Cheshmeh Kabood et al., 2025). This integrative perspective underscores the أهمية of addressing both psychological and physiological aspects of fatigue in clinical interventions.

The observed differences between the experimental and control groups also highlight the limitations of relying solely on non-intervention or standard care approaches in managing cognitive fatigue. The control group in this study did not show significant improvement and, in some cases, exhibited increased fatigue over time. This finding is consistent with previous research indicating that fatigue in MS tends to persist or worsen without targeted intervention (Krupp & Elkins, 2000). Therefore, incorporating structured psychological interventions such as short-term object relations therapy into treatment programs may be essential for achieving meaningful improvements in patient outcomes.

Another noteworthy aspect of the findings is the role of interpersonal and relational processes in shaping cognitive fatigue. Object relations theory emphasizes that individuals'

experiences of stress and emotional distress are deeply embedded in their relational patterns and internalized representations of others. Dysfunctional object relations can lead to chronic emotional tension, which may manifest as cognitive fatigue. By facilitating the exploration and restructuring of these patterns, the intervention likely helped participants reduce internal conflicts and improve their emotional resilience. This interpretation is supported by research demonstrating that impaired object relations are associated with increased psychological distress and psychosomatic symptoms (Sarlak, 2024; Zarrati et al., 2020). Thus, the therapeutic focus on relational dynamics may have been a key factor in reducing fatigue.

Furthermore, the integration of selected cognitive-behavioral techniques within the object relations framework may have enhanced the effectiveness of the intervention. Techniques such as relaxation training and daily activity monitoring can provide immediate symptom relief and increase patients' sense of control over their condition. When combined with deeper psychodynamic work, these techniques may create a synergistic effect, addressing both surface-level symptoms and underlying psychological mechanisms. This integrative approach is consistent with contemporary trends in psychotherapy, which emphasize the value of combining different theoretical perspectives to achieve optimal outcomes.

Overall, the findings of this study contribute to the growing literature on the psychological treatment of cognitive fatigue and highlight the potential of short-term object relations therapy as an effective intervention for patients with MS. By demonstrating significant and sustained reductions in fatigue, the study provides evidence for the أهمية of addressing emotional and relational factors in the management of chronic neurological conditions. The results also underscore the need for further research to explore the mechanisms of change and to identify factors that may influence treatment outcomes.

One of the main limitations of the present study is the relatively small sample size, which may limit the generalizability of the findings. Additionally, the use of convenience sampling and recruitment from a single clinical center may introduce selection bias. Another limitation is the reliance on self-report measures, which may be subject to response bias and may not fully capture the complexity of cognitive fatigue. The absence of long-term follow-up beyond three months also limits the ability to assess the durability of treatment effects over extended periods. Furthermore, potential confounding variables such as

medication use, disease progression, and lifestyle factors were not fully controlled, which may have influenced the results.

Future research should aim to replicate these findings using larger and more diverse samples to enhance external validity. Longitudinal studies with extended follow-up periods are needed to examine the long-term effectiveness and stability of short-term object relations therapy. In addition, future studies could explore the mechanisms underlying the observed effects by incorporating measures of emotional regulation, interpersonal functioning, and neurocognitive processes. Comparative studies examining the effectiveness of object relations therapy relative to other therapeutic approaches, such as cognitive-behavioral therapy or mindfulness-based interventions, would also be valuable. Finally, integrating neuroimaging or physiological measures could provide deeper insights into the interaction between psychological interventions and neurological functioning in MS.

From a practical perspective, the findings of this study suggest that short-term object relations therapy can be effectively incorporated into clinical practice for patients with MS experiencing cognitive fatigue. Clinicians should consider adopting integrative therapeutic approaches that address both emotional and relational factors, in addition to physical symptoms. Training programs for mental health professionals should include components on psychodynamic and object relations-based interventions to enhance treatment effectiveness. Healthcare systems may also benefit from incorporating group-based psychotherapy programs, which are cost-effective and provide opportunities for peer support. Moreover, early psychological intervention may help prevent the escalation of fatigue and improve overall quality of life for patients with chronic conditions.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent. The present study received ethical approval from the Islamic Azad University, Najafabad Branch (Isfahan), with the ethics code IR.IAU.NAJAFABAD.REC.1404.223.

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