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Comparison of the Effectiveness of Acceptance and Commitment Therapy and Transdiagnostic Therapy on Interpersonal Guilt and Emotional Inhibition in Patients with Multiple Sclerosis

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A B S T R A C T

Objective: The aim of the present study was to compare the effectiveness of Acceptance and Commitment Therapy (ACT) and Transdiagnostic Therapy on interpersonal guilt and emotional inhibition in patients with Multiple Sclerosis (MS).

Methods and Materials: The study employed a quasi-experimental design with pre-test, post-test, and follow-up phases, including a control group. The research population consisted of all women aged 20 to 40 years with MS who were members of the MS Association of Amol in the first half of 2023. The research sample included 48 individuals with MS who were selected through simple random sampling and were randomly assigned to two experimental groups and one control group. The research instruments included the Interpersonal Guilt Scale by Gazzillo et al. (2018) and the Emotional Inhibition Scale by Kellner (1986). Data were analyzed using repeated measures analysis of covariance (ANCOVA) and Bonferroni post-hoc tests with SPSS version 24 software.

Findings: The results indicated significant differences between the effects of ACT, Transdiagnostic Therapy, and the control group on the variables of interpersonal guilt and emotional inhibition ($P < 0.05$). Furthermore, post-hoc test results revealed that Transdiagnostic Therapy had the most significant therapeutic effects on improving emotional inhibition in patients with MS compared to ACT. The two-month follow-up confirmed the stability of the study's results.

Conclusion: The effectiveness of both therapeutic approaches suggests that clinicians and treatment teams can utilize psychological treatment approaches alongside biological treatments to reduce the severity of psychological and emotional symptoms resulting from chronic illnesses, thereby facilitating the treatment process.

Keywords: *Acceptance and Commitment Therapy, Transdiagnostic Therapy, Multiple Sclerosis, Interpersonal Guilt, Emotional Inhibition.*

1. Introduction

ultiple Sclerosis (MS) is a long-term central nervous system disorder and is one of the most common neurological diseases in humans. The most common onset occurs in early adulthood (between the ages of 20 and 40) and is more prevalent in men (Dobson & Giovannoni, 2019). The National MS Society of the United States reported that approximately 2.5 million people worldwide are affected by MS, with 200 new cases being added each week (Patel et al., 2024). According to previous studies, nearly half of MS patients experience mental health issues and suffer from emotional and affective problems (Silveira et al., 2019), with interpersonal guilt being one of the most common emotional and affective issues among MS patients (Pourhaji et al., 2023). Interpersonal guilt is considered a secondary outcome of physical diseases such as MS, as individuals with physical illnesses like MS may perceive themselves as having broken a prior commitment or social contract due to the stigma they endure from others and various groups (Hanna & Strober, 2020). Guilt, as "an interpersonal phenomenon functionally and causally related to collective relationships among individuals, is considered a mechanism for reducing imbalance or inequality in emotional distress among MS patients" (Hanna & Strober, 2020).

In addition to interpersonal guilt, one of the most significant emotional and psychological issues in individuals with MS is emotional inhibition (Dehghan et al., 2023). An individual's ability to regulate emotions can help them calm down, manage emotional arousal, and modulate emotional experiences (Peña-Sarrionandia et al., 2015). Emotional inhibition and lack of emotional regulation are not only positively associated with psychological outcomes such as reduced psychological well-being and increased depression and anxiety, but they also predispose individuals to physical illnesses, including MS and its symptoms (Dehghan et al., 2023).

Given the significant relationship between MS and psychological and emotional distress (Silveira et al., 2019), treatments that can reduce negative emotions such as emotional inhibition and interpersonal guilt and improve emotional regulation may lead to a long-term reduction in psychological and emotional symptoms in MS patients. Among the effective treatments for MS patients is Acceptance and Commitment Therapy (ACT) (Merwin et al., 2023). ACT is one of the third-wave behavioral therapies, with the primary goal of creating psychological flexibility, which means the ability to make more appropriate practical choices among various options, rather than avoiding distressing thoughts, feelings, or urges imposed on the individual (Davis et al., 2024; Hayes, 2016; Hayes et al., 2009). Regarding the effectiveness of group-based ACT on emotional, behavioral, and psychological characteristics of individuals with MS, Pakenham and Landi (2023) found that ACT increases and improves quality of life, flexibility, and reduces psychological distress in individuals with MS (Pakenham & Landi, 2023). Research findings also indicate that ACT is effective in reducing emotional dysregulation in MS patients (Alizadeh et al., 2023), reducing cognitive fusion, problematic acquisition-disposal, entanglement, negative affect, attachment anxiety, obsessive-compulsive disorder, and difficulties in emotional regulation in hoarding patients (Fang et al., 2023), improving emotional regulation in cardiovascular patients (Fattahi et al., 2023), and increasing resilience and quality of life in MS patients (Karimi et al., 2022).

Another effective third-wave psychotherapy method in reducing psychological and emotional problems in MS patients is Transdiagnostic Therapy. Transdiagnostic Therapy is derived from Cognitive Behavioral Therapy (CBT) and focuses on emotions, targeting unpleasant emotions and providing patients with training in adaptive and effective emotional regulation strategies. Transdiagnostic Therapy emphasizes the adaptive nature and use of emotions, enhancing awareness of the role of emotions, cognitions, bodily sensations, and behaviors (Barlow et al., 2017; Barlow et al., 2020). In this regard, Farchione et al. (2023) found that Transdiagnostic Therapy plays a significant role in treating emotional and psychological disorders such as anxiety, depression, and stress, as well as their consequences, including interpersonal guilt in patients with physical illnesses (Farchione et al., 2023). Research findings also indicate that Transdiagnostic Therapy is effective in improving emotional regulation and interpersonal relationships (Blay et al., 2024), significantly reducing emotional and affective problems (Schaeuffele et al., 2024), significantly increasing and improving psychological well-being, positive emotional regulation strategies, and significantly reducing negative and maladaptive emotional regulation strategies in MS patients (Fragkiadaki et al., 2023), and reducing feelings of hopelessness, psychological distress, and negative emotional regulation strategies while increasing and promoting positive emotional regulation strategies in clinical populations (Celleri et al., 2023).

Regarding the comparison between Transdiagnostic Therapy and ACT on the psychological, emotional, and

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affective characteristics of various groups, research findings are somewhat inconsistent. For example, in a study conducted among nurses, Kohneshin Taromi et al. (2021) found that ACT significantly reduces emotional problems among nurses. Additionally, Transdiagnostic Therapy has a significantly more positive impact than ACT on reducing emotional problems and increasing life satisfaction among nurses (Kouhneshin Taromi et al., 2021). On the other hand, in a study conducted by Karimian et al. (2021) among individuals with Irritable Bowel Syndrome (IBS), no significant difference was found between the effectiveness of Transdiagnostic Therapy and ACT on illness perception and emotional regulation strategies in IBS patients. Shahkaram et al. (2024), in a clinical trial, concluded that there was no significant difference between the effectiveness of Transdiagnostic Therapy and ACT on depression, rumination, and life satisfaction; however, Transdiagnostic Therapy was significantly more effective than ACT in reducing anxiety (Karimian et al., 2021). Joaquim et al. (2023) demonstrated that Transdiagnostic Therapy outperforms wait-list conditions and common psychological treatments such as ACT in reducing psychological and emotional disorders, including anxiety, depression, and stress, as well as in enhancing and improving positive and adaptive psychological components (Joaquim et al., 2023). Amiri et al. (2023) found that both ACT and Transdiagnostic Therapy are effective in improving sexual function and Type D personality components in cardiovascular patients, with no significant difference in the effectiveness of both approaches (Amiri et al., 2023). Azadmanesh et al. (2021) found that both ACT and Transdiagnostic Unified Therapy significantly reduced anxiety and lupus symptoms in the experimental group, with no significant difference in the effectiveness of these two treatments (Azadmanesh et al., 2021).

In summary, based on the aforementioned information, MS is a chronic and progressive disease of the central nervous system that significantly affects individuals' physical and emotional health. Among the interventions and approaches related to reducing and improving symptoms of MS-related psychological and emotional problems are ACT and Transdiagnostic Therapy. However, given that previous research has rarely examined the effectiveness of these two psychological treatments on the psychological symptoms of MS patients, and considering the inconsistent findings regarding the comparative effectiveness of Transdiagnostic Therapy and ACT on the behavioral, psychological, and emotional characteristics of individuals with various conditions, the present study seeks to answer the question: Is there a significant difference between the effectiveness of ACT and Transdiagnostic Therapy on interpersonal guilt and emotional inhibition in MS patients?

2. Methods and Materials

2.1. Study Design and Participants

The present study is an experimental research using a quasi-experimental design with pre-test, post-test, and follow-up phases, involving two experimental groups and one control group. The statistical population of the study included all female MS patients who were members of the MS Association of Amol in 2023, totaling 212 individuals. Inclusion criteria included residence in Amol, age range of 20 to 40 years, at least a high school diploma, female gender, no psychological disorders as diagnosed using a semi-structured diagnostic interview based on DSM-5 criteria, and high scores on the Interpersonal Guilt and Emotional Inhibition questionnaires. Exclusion criteria included the use of psychiatric or psychoactive drugs, concurrent participation in other psychological treatments, and male gender. The research sample included 48 female MS patients selected through purposive sampling based on the inclusion and exclusion criteria. The sample size was determined using G*Power version 3.1 software. The required sample size for each experimental and control group was 16 individuals, totaling 48 individuals, considering the following parameters: effect size = 0.5, test power = 96%, alpha coefficient = 0.05, repetitions = 3, non-centrality parameter $\lambda = 23$, critical F = 2.2085538, Pillai's V = 0.4, and actual power = 0.9549172.

To select the sample, a list of patients who were members of the MS Association of Amol and met the research criteria was prepared. In the next stage, 60 individuals were selected from this list using convenience sampling and invited to participate in the treatment sessions via phone calls. Among the volunteers, 48 individuals who scored high on the Emotional Inhibition and Interpersonal Guilt questionnaires and met the inclusion criteria were randomly assigned to two experimental groups (16 individuals in the ACT group and 16 individuals in the Transdiagnostic Therapy group) and a control group (16 individuals) and were invited to attend an orientation session and take the pre-test.

After obtaining the necessary permits and introductory letters, the researcher visited the MS Association of Amol, and coordination was made to access the MS patients through the association. Volunteers were invited to attend an

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orientation session. Then, based on the inclusion and exclusion criteria, 48 individuals were selected through purposive sampling. Participants in both experimental and control groups completed the research instruments during the pre-test phase. The treatment sessions for the first experimental group included 8 sessions of 90 minutes of ACT based on the ACT protocol by Hayes et al. (2009), and the treatment sessions for the second experimental group included 10 sessions of 90 minutes of Transdiagnostic Therapy based on the Transdiagnostic Therapy protocol by Barlow et al. (2017), held once a week. Due to the physical condition of MS patients and their inability to attend long sessions, each 90-minute session was divided into two 45-minute sessions with a 15-minute break, during which the patients were provided refreshments. After the treatment sessions were completed for both therapy groups, a post-test was administered to all participants (experimental and control groups), and a follow-up assessment was conducted 2 months after the treatment. All three groups received standard medical treatment for MS, with the only difference being the receipt or non-receipt of experimental treatments. To adhere to ethical principles, after the follow-up phase, the control group was also provided with 8 or 10 sessions of one of the two treatment methods—ACT or Transdiagnostic Therapy—based on their preference.

2.2. Measures

2.2.1. Interpersonal Guilt

This questionnaire was designed by Gazzillo et al. (2018) and consists of 15 items to assess interpersonal guilt. The scoring is based on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much). The minimum and maximum scores on this questionnaire are 15 and 75, respectively. The reliability of the original version using Cronbach's alpha was reported as 0.83 (Gazzillo et al., 2018). The questionnaire was standardized in Iran by Sadeghi et al. (2022). In the study by Sadeghi et al. (2022), convergent and divergent validity were assessed using the 67-item Interpersonal Guilt Questionnaire by O'Connor, psychological well-being, and personality questionnaires, with results indicating a significant relationship and correlation between the Interpersonal Guilt Questionnaire and the mentioned questionnaires in the Iranian population ($P < 0.01$). The reliability of this questionnaire using Cronbach's alpha was reported as 0.76. Additionally, in the study by Sadeghi et al. (2022), confirmatory factor analysis results after model modification (15-item version) showed good fit with the data. Overall, the findings from Sadeghi et al.'s (2022) study indicate that the psychometric properties of the Interpersonal Guilt Questionnaire are suitable for the Iranian population (Sadeghi et al., 2022). The reliability of the Interpersonal Guilt Questionnaire in the present study was obtained using Cronbach's alpha coefficient of 0.81.

2.2.2. Emotional Inhibition

Emotional inhibition was assessed using the Emotional Inhibition Questionnaire by Kellner (1986). This questionnaire consists of 16 items scored on a 5-point Likert scale ranging from 0 (no) to 4 (always). In this questionnaire, to assess the level of emotional inhibition, the items' scores are summed, with the total score ranging from 0 to 64. It is worth noting that 6 items in this questionnaire are reverse-scored (Kellner, 1986). In the study by Grandi et al. (2011), the Cronbach's alpha coefficient for the entire questionnaire was reported as 0.79, indicating acceptable internal consistency. This questionnaire was standardized in Iran by Asadollahi et al. (2022). According to the study by Asadollahi et al. (2022), the Cronbach's alpha coefficient for the questionnaire was 0.79, and the results of the correlation analysis between the Emotional Inhibition Questionnaire by Kellner and the Executive Dysfunction Questionnaire indicated a significant correlation between the items of the two tools and the concurrent validity of the Emotional Inhibition Questionnaire by Kellner in the Iranian population (Asadollahi et al., 2022). The reliability of the Emotional Inhibition Questionnaire in the present study was obtained using Cronbach's alpha coefficient of 0.88.

2.2.3. Semi-Structured Diagnostic Interview

The Semi-Structured Diagnostic Interview using DSM-5 criteria is a semi-structured clinical interview conducted by a clinical psychology specialist with a master's degree to diagnose major psychological disorders based on DSM-5 criteria. This tool has been used more than any other diagnostic interview in psychiatric evaluations due to its confirmed content validity and reliability by experts and specialists (Nasbum, 2013).

2.3. Interventions

2.3.1. Acceptance and Commitment Therapy

The ACT package in the present study included 8 sessions of 90 minutes each, with one session per week, based on the

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ACT approach by Hayes et al. (2009) (Hayes, 2016; Hayes et al., 2009).

Session 1: The therapist introduces themselves and outlines the goals of the therapy. Participants are asked to introduce themselves, and the therapist provides an overview of Multiple Sclerosis (MS). A diagnostic interview is conducted, and the therapy framework is established.

Session 2: The session introduces the core concepts of Acceptance and Commitment Therapy (ACT). The focus is on building awareness in the patients regarding their issues and challenging the notion of control over their symptoms.

Session 3: This session is dedicated to teaching the concept of "creative hopelessness," where patients explore the list of discomforts and problems they have tried to escape. The futility of their previous attempts at control is highlighted.

Session 4: The focus is on fostering acceptance and mindfulness by encouraging patients to relinquish their attempts at control. Cognitive defusion techniques are introduced, and a review of the previous session and assigned tasks is conducted.

Session 5: Patients are guided to learn about value-based living, where they identify and align their actions with their core values. Previous sessions and assignments are reviewed to ensure continuity.

Session 6: This session is dedicated to evaluating the patients' goals and actions. The therapist helps in clarifying the patients' values, setting goals, and identifying obstacles that may hinder progress.

Session 7: Values, goals, and actions are revisited. Patients are encouraged to engage with their passions and commit to actions that align with their values. This session deepens their engagement with the therapeutic process.

Session 8: The final session focuses on identifying and overcoming barriers to committed action. A summary of all sessions is provided, reinforcing the lessons learned and preparing patients for continued progress post-therapy.

2.3.2. Transdiagnostic Therapy

The Transdiagnostic Therapy package in the present study included 10 sessions of 90 minutes each, with one session per week, based on the Unified Transdiagnostic Therapy approach by Barlow et al. (2017) (Barlow et al., 2017; Barlow et al., 2020).

Session 1: The therapist introduces themselves and establishes the goals of the therapy. Participants introduce themselves, and the therapist provides an overview of MS to enhance understanding.

Session 2: Psychoeducation is provided, focusing on recognizing emotions and tracking emotional experiences. The three-component model of emotional experiences (cognitive, physiological, and behavioral) is introduced.

Session 3: This session emphasizes the importance of emotional arousal as a therapeutic component, both within and between sessions. Emotional review strategies and techniques for managing emotions are taught.

Session 4: Patients are trained to increase non-judgmental, present-moment awareness of emotional experiences, avoiding emotional suppression. Emotional arousal through mindfulness and emotion induction exercises is practiced.

Sessions 5 and 6: The role of cognitive appraisal in the development and maintenance of emotional responses is explored. Patients learn to identify and reevaluate thought patterns to promote cognitive flexibility, with a focus on correcting fundamental errors in thinking associated with psychological and emotional distress.

Sessions 7 and 8: Patients are taught how to identify emotion-driven behaviors and create behaviors that are incongruent with these emotional responses. Emotional exposure is practiced, and the impact of emotional avoidance (behavioral, cognitive, and safety signals) on sustaining emotional responses is examined. Techniques to recognize and prevent emotional avoidance patterns are introduced.

Session 9: The session focuses on identifying internal and external emotional triggers. Patients are taught distress tolerance techniques for emotions and how to create new contextual learning. An emotional avoidance hierarchy is designed, and previous therapeutic skills are integrated into emotional exposure practices.

Session 10: The final session involves a summary of the therapy, with a focus on preventing relapse. Patients learn strategies to prevent emotional avoidance and enhance emotional tolerance for continued progress after therapy concludes.

2.4. Data analysis

Data were analyzed using SPSS version 24 and statistical methods including mean, standard deviation, skewness, and kurtosis to assess the normality assumption of variable distributions, Levene's test for homogeneity of variances among groups, and multivariate analysis of covariance

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(MANCOVA) with repeated measures and Bonferroni post-hoc tests at a significance level of 0.05.

3. Findings and Results

The average age of the participants was 31.145 years, with an age range of 20 to 40 years. In terms of education, 9 individuals (18.8%) held a high school diploma, 8 individuals (16.6%) had an associate's degree, 22 individuals (45.8%) held a bachelor's degree, and 9 individuals (18.8%) had a master's degree. Regarding marital status, 12 participants (25%) were single, and 36 participants (75%) were married.

Table 1

Means and Standard Deviations of Interpersonal Guilt and Emotional Inhibition in the Three Research Groups

Variables	Tests	Control	Acceptance and Commitment Therapy	Transdiagnostic Therapy
		Mean (SD)	Mean (SD)	Mean (SD)
Interpersonal Guilt	Pre-test	47.125 (1.927)	47.937 (2.909)	47.750 (2.265)
	Post-test	46.625 (1.857)	42.687 (2.023)	41.000 (2.966)
	Follow-up	47.000 (1.825)	43.562 (2.064)	41.812 (3.037)
Emotional Inhibition	Pre-test	38.187 (3.581)	37.562 (2.632)	37.750 (2.265)
	Post-test	38.187 (2.880)	31.937 (2.264)	28.187 (2.587)
	Follow-up	37.875 (2.629)	31.750 (2.323)	28.437 (1.896)

Table 1 shows the means and standard deviations of the research variables—interpersonal guilt and emotional inhibition—across the three participant groups: the control group, the Acceptance and Commitment Therapy (ACT) group, and the Transdiagnostic Therapy group at three stages: pre-test, post-test, and follow-up.

The results of the Shapiro-Wilk test for normality of the research variables—interpersonal guilt and emotional inhibition—in women with MS across the three groups (one control and two experimental groups: ACT and Transdiagnostic Therapy) at three stages (pre-test, post-test, and follow-up) were not statistically significant ($P > .05$). Therefore, the distribution of both variables, interpersonal guilt and emotional inhibition, across the three groups is normal, allowing for the use of parametric tests in data analysis. The results of the Levene's test to check the assumption of homogeneity of error variances for the variables interpersonal guilt and emotional inhibition at the three stages (pre-test, post-test, and follow-up) showed that the homogeneity of error variances was not statistically significant for any of the research variables ($P > .05$). This means that the assumption of homogeneity of error variances was correctly maintained.

Another assumption of repeated measures analysis of variance (ANOVA) is Mauchly's test of sphericity, the results of which showed that the significance level for the variable interpersonal guilt was less than .05, while for the variable emotional inhibition, it was .060. Therefore, the assumption of sphericity is rejected for the variable interpersonal guilt but accepted for emotional inhibition. Consequently, for the variable interpersonal guilt, a violation of the F-statistic occurred, and as a result, the more conservative Greenhouse-Geisser correction was used to examine the within-subject effects of the treatment, with the results shown in Table 2.

Table 2

Results of Repeated Measures ANOVA for Total Scores of Research Variables in Three Phases

Variables	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Effect Size
Interpersonal Guilt	Time	479.014	1.555	307.993	120.563	.001	.728
	Time × Group	210.861	3.111	67.789	26.536	.001	.541
Emotional Inhibition	Factor	833.847	1.786	466.864	124.266	.001	.734
	Factor × Group	466.861	3.572	130.696	34.787	.001	.607

Based on the results in Table 2, the main effect of the group on the research variables—interpersonal guilt and emotional inhibition—was significant ($P < .001$). In other words, the overall mean scores of interpersonal guilt and emotional inhibition in the experimental groups (ACT and Transdiagnostic Therapy) and the control group differed

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significantly (P < .001). The interaction effect of time and group was also significant (P < .001), indicating that the trend of changes in the mean scores of interpersonal guilt and emotional inhibition across the pre-test, post-test, and follow-up stages differed significantly among the three groups studied. The results of the Bonferroni post-hoc test for pairwise group comparisons are provided in Table 3.

Table 3

Results of Bonferroni Test for Pairwise Comparisons of Mean Total Scores of Research Variables in MS Patients

Variable	Group Comparison	Mean Difference	Sig.
Interpersonal Guilt	Control - ACT	2.188	.014
	Control - Transdiagnostic Therapy	3.396	.001
	ACT - Transdiagnostic Therapy	1.208	.317
Emotional Inhibition	Control - ACT	4.333	.001
	Control - Transdiagnostic Therapy	6.625	.001
	ACT - Transdiagnostic Therapy	2.292	.012

In Table 3, considering the significant effects of group and time, the results of the Bonferroni post-hoc test for pairwise group comparisons are presented. The test results showed a significant difference between the experimental groups and the control group in all research variables—interpersonal guilt and emotional inhibition (P < .05), indicating the effectiveness of both ACT and Transdiagnostic Therapy. However, no significant difference was found between ACT and Transdiagnostic Therapy in terms of interpersonal guilt and psychological distress (P > .05), indicating that both therapies were equally effective in reducing interpersonal guilt in MS patients. In contrast, a significant difference was observed between ACT and Transdiagnostic Therapy for the variable emotional inhibition (P < .05), with Transdiagnostic Therapy being significantly more effective than ACT in reducing emotional inhibition in MS patients.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of ACT and Transdiagnostic Therapy on interpersonal guilt and emotional inhibition in patients with Multiple Sclerosis (MS). The results showed a significant difference between ACT and Transdiagnostic Therapy in their effectiveness on emotional inhibition in MS patients, with no significant difference in their effectiveness on interpersonal guilt. Transdiagnostic Therapy was significantly more effective than ACT in reducing emotional inhibition.

Given that no prior research has directly compared the effectiveness of ACT and Transdiagnostic Therapy on psychological and emotional components in MS patients, the researcher refers to similar studies conducted on other patient groups. The findings that Transdiagnostic Therapy was more effective than ACT in reducing emotional inhibition in MS patients align with previous studies (Joaquim et al., 2023; Kouhneshin Taromi et al., 2021; Shahkaram et al., 2024) found that Transdiagnostic Therapy was significantly more effective than ACT in reducing anxiety in patients with Irritable Bowel Syndrome (IBS).

Explaining the greater effectiveness of Transdiagnostic Therapy compared to ACT on emotional inhibition in MS patients, it can be argued that in the Transdiagnostic Therapy approach, clients learn to adjust their intensity of reactions to negative and maladaptive emotions. The focus is not on reducing these negative emotions but rather on reducing the negative reactions and avoidance behaviors associated with them. This approach helps patients with MS experience and accept both positive and negative emotions, thus improving emotional and psychological functioning. In contrast, ACT emphasizes confronting and accepting the distressing experiences directly, which may have a less significant impact on reducing emotional inhibition.

Regarding the lack of a significant difference between ACT and Transdiagnostic Therapy on interpersonal guilt in MS patients, the findings are consistent with previous studies (Amiri et al., 2023; Azadmanesh et al., 2021), which also found no significant difference in the effectiveness of these therapies on sexual functioning and Type D personality traits in cardiovascular patients. Both ACT and Transdiagnostic Therapy share a common foundation as third-wave Cognitive Behavioral Therapies, focusing on emotions and acceptance, which might explain the lack of significant difference in their impact on interpersonal guilt.

In the context of the effectiveness of ACT on interpersonal guilt and emotional inhibition in MS patients, the findings are in line with previous studies (Alizadeh et al., 2023; Davis et al., 2024; Fang et al., 2023; Fattahi et al.,

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2023; Karimi et al., 2022). Alizadeh et al. (2023) found that ACT reduced emotional dysregulation in MS patients, with scores significantly decreasing across 8 intervention sessions and the follow-up phase (Alizadeh et al., 2023).

In terms of Transdiagnostic Therapy's effectiveness on interpersonal guilt and emotional inhibition in MS patients, the results align with previous studies (Blay et al., 2024; Celleri et al., 2023; Farchione et al., 2023; Fragkiadaki et al., 2023; Schaeuffele et al., 2024) which found that Transdiagnostic Therapy plays a significant role in treating emotional and psychological issues, such as anxiety, depression, stress, and their consequences, including interpersonal guilt and emotional inhibition in patients with physical illnesses such as MS and IBS.

5. Limitations & Suggestions

Overall, the findings of this study indicate no significant difference in interpersonal guilt between the post-test and follow-up stages in the two treatment groups. However, there was a notable difference in emotional inhibition, with Transdiagnostic Therapy being significantly more effective than ACT in reducing emotional inhibition in MS patients. It is recommended that clinicians, psychotherapists, and specialists use Transdiagnostic Therapy and ACT as effective psychological treatments for the emotional symptoms of MS patients to improve their psychological symptoms.

Among the limitations of this study are the lack of control over some variables, such as personality traits, socioeconomic status, and cognitive abilities, and the selection of the research sample only from female MS patients who are members of the MS Association of Amol. It is recommended that future studies on this topic be conducted with different samples from other cities and include male participants. Additionally, it is suggested that future studies match the control and experimental groups in terms of age, marital status, and pre-test scores. Finally, it is recommended that future research examines the effectiveness of ACT and Transdiagnostic Therapy on other psychological and emotional variables in MS patients.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed in this article.

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