

Research Paper



Effect of Logotherapy Intervention on Death Anxiety, Pain Catastrophizing, and Hope in Patients With Multiple Sclerosis

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ABSTRACT

Objective: Multiple sclerosis (MS) is a chronic neurological condition that is often accompanied by significant emotional and psychological challenges, including profound existential concerns and maladaptive cognitive patterns related to pain and suffering. The present study aimed to evaluate the effects of a logotherapy-based intervention on death anxiety, pain catastrophizing, and dispositional hope among patients with MS.

Methods: This study utilized a randomized controlled trial (RCT) featuring pre- and post-intervention assessments along with a control group. The participants were patients with MS who visited the neurology outpatient clinic at Golestan Hospital in Ahvaz, Iran, in 2025. Thirty eligible patients with MS were selected through convenience sampling and randomly divided into two groups: an intervention group (n=15) and a control group (n=15). Participants in the intervention group took part in ten weekly 60-minute logotherapy sessions. The control group did not receive any additional psychological intervention and continued with their routine medical care during the study period. Measurements were obtained using the death anxiety scale, the pain catastrophizing scale, and the adult hope scale. Data were analyzed using MANCOVA and follow-up ANCOVA in SPSS software, version 27.

Results: Compared to the control group, participants in the intervention group demonstrated statistically significant reductions in death anxiety and pain catastrophizing, alongside a substantial increase in hope scores ($P < 0.001$).

Conclusion: Logotherapy is an effective psychological approach for improving mental health outcomes in patients with MS. It successfully reduces dysfunctional cognitive responses to pain and alleviates death-related fears while simultaneously enhancing a sense of meaning and hope in life.

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Highlights

- Logotherapy significantly reduced death anxiety and pain catastrophizing in patients with MS after 10 sessions.
- Logotherapy led to a substantial increase in dispositional hope compared to the controls.
- Logotherapy is as an effective meaning-centered intervention for MS.

Plain Language Summary

Multiple sclerosis (MS) is a long-term illness that often causes not only physical problems but also deep emotional challenges, such as fear of death, exaggerated worries about pain, and loss of hope. This study tested whether logotherapy — a type of talking therapy that helps people find meaning in life even during suffering — could help women with MS. Thirty women took part: half received ten weekly logotherapy sessions, while the other half continued their usual medical care. After the sessions, women who received logotherapy showed much lower fear of death, less catastrophic thinking about pain, and higher levels of hope compared to the control group.

Introduction

Multiple sclerosis (MS) is a chronic, progressive neurological condition marked by ongoing inflammation and progressive damage to the central nervous system. It is marked by ongoing damage to the myelin sheath and eventual injury to axons (Boutitah-Benyaich et al., 2025). As a result, individuals experience a wide array of physical symptoms, such as sensory changes, muscle weakness, and difficulties with thinking and cognition. The prevalence of MS has seen a substantial rise globally, with a particularly marked increase in Iran, where rates are among the highest in the Middle East and North Africa; recent estimates indicate a prevalence exceeding 100 per 100,000 population, disproportionately affecting young women (Dastoorpoor et al., 2022). For these individuals, MS is not merely a medical diagnosis but a life-altering event that disrupts professional, social, and personal trajectories. The unpredictable nature of relapses and the cumulative disability associated with the disease impose an immense psychological burden, often resulting in severe emotional distress, social isolation, and a significant decline in quality of life (Barkhordari-Sharifabad et al., 2023). Addressing these multifaceted challenges requires a shift from purely somatic treatments toward integrated biopsychosocial models of care that prioritize the patient's mental well-being alongside physical rehabilitation (Kassie et al., 2021).

A significant psychological issue for patients with MS is death anxiety — a persistent and intense fear of one's own death or the dying process (Francalancia et al., 2021). Given the progressive and currently incurable nature of MS, patients frequently encounter existential crises and a height-

ened awareness of their physiological vulnerability (Zare et al., 2024). This anxiety is not merely a fear of the end of life; it encompasses profound concerns regarding physical deterioration, the loss of autonomy, and the potential impact of one's death on family members. High levels of death anxiety can exacerbate other psychiatric symptoms, lead to avoidance behaviors, and significantly reduce the patient's capacity to engage in rehabilitative efforts (Lotfifar et al., 2021).

Pain is a hallmark symptom of MS. Beyond its sensory aspects, pain catastrophizing — a maladaptive cognitive-emotional reaction involving rumination, magnification, and helplessness — is particularly detrimental in this population (Arewasikporn et al., 2018). Empirical evidence indicates that higher levels of pain catastrophizing in MS patients are associated with increased pain intensity, greater functional disability, elevated psychological distress, and poorer treatment outcomes, making it a critical target for psychological intervention (Anagnostopoulos et al., 2023; Webster et al., 2023).

Unlike these maladaptive patterns, hope functions as a key psychological strength and a safeguard against the burdens of chronic disease (Gülirmak Güler et al., 2024). Drawing from Snyder's model, hope is viewed as a cognitive process oriented toward goals, consisting of two main components: "agency," which reflects the drive and determination to reach objectives, and "pathways," which refers to the belief in one's capacity to devise routes toward those objectives (Laranjeira & Querido, 2022). Among individuals with MS, hope shows strong connections to greater resilience, better compliance with treatment, and higher overall satisfaction with life (Lee et al., 2022; Maghsoudi et al., 2024).

Given the profound existential dimensions of death anxiety, pain catastrophizing, and diminished hope in patients with MS, logotherapy was employed as the intervention in the present study. Logotherapy, developed by Viktor Frankl, is a meaning-centered psychotherapeutic approach based on the belief that the primary motivational force in humans is the “will to meaning” (Rahgozar & Giménez-Llort, 2020). It is particularly well-suited to address death anxiety by helping patients discover meaning despite the threat of mortality and by fostering “tragic optimism.” It can reduce pain catastrophizing through dereflection techniques that shift focus away from hyper-attention to somatic symptoms toward meaningful external tasks and values. Furthermore, logotherapy enhances hope by strengthening both agency (through a renewed sense of purpose) and pathways (by encouraging the pursuit of meaning-oriented goals even amid physical limitations).

Earlier empirical research has confirmed the effectiveness of logotherapy in reducing death anxiety and increasing hope among individuals facing serious illness. Studies indicate that interventions focused on meaning markedly decrease death-related fears among cancer survivors and individuals with chronic kidney disease (Wang et al., 2025; Mehrizi et al., 2022). In the context of MS, initial findings suggest potential benefits; however, research examining the specific impact of logotherapy on the combination of death anxiety, pain catastrophizing, and hope remains relatively scarce (Hajibabaei et al., 2020).

The present study was conducted exclusively with female patients with MS because the disease shows a markedly higher prevalence among women, who also tend to report greater psychological distress and existential concerns related to chronic illness compared with men; focusing on this group enhances the clinical relevance and applicability of the findings in a high-risk population.

The necessity of this study arises from the increasing psychological complexity observed in patients with MS and the limitations of purely pharmacological treatments in addressing existential and cognitive-emotional distortions. While medical therapies manage physical symptoms, existential fears, maladaptive pain-related cognitions, and diminished hope often remain unaddressed. There is a critical need for structured, meaning-centered interventions that can simultaneously target these inter-related psychological challenges. Accordingly, the current research aimed to evaluate the effect of logotherapy on death anxiety, pain catastrophizing, and hope in women with MS.

Materials and Methods

Study design and participants

This research employed a randomized controlled trial (RCT) featuring pre- and post-treatment assessments along with a control group. The target population consisted of female patients with a confirmed diagnosis of MS who attended the neurology outpatient department at Golestan Hospital in Ahvaz, Iran, during 2025. Thirty eligible patients with MS were enrolled using convenience sampling. Participants were recruited through the neurology outpatient clinic at Golestan Hospital in Ahvaz, Iran, where potential candidates were identified by reviewing medical records and approaching eligible patients during their routine clinic visits. They were subsequently randomized into two groups: An intervention arm (n=15) and a control arm (n=15). Randomization was performed using a computer-generated random number sequence with allocation concealment.

The sample size was determined a priori using G*Power software, version 3.1 for a multivariate analysis of covariance (MANCOVA), assuming a medium-to-large effect size ($f^2=0.25$), power of 0.80, and $\alpha=0.05$. Eligibility criteria for inclusion were neurologist-confirmed MS diagnosis, identifying as women, age range of 20–50 years, and voluntary written informed consent. Participants were excluded if they had any severe co-occurring psychiatric conditions, were simultaneously enrolled in another psychological therapy program, or failed to attend more than two of the intervention sessions.

All procedures were performed in accordance with the ethical standards of the institutional research committee and the 1964 Helsinki Declaration and its later amendments. Written informed consent was obtained from all individual participants prior to their inclusion in the study. Participants were assured of confidentiality, their right to withdraw at any time without any negative consequences, and that their decision to participate or not would not affect their routine medical care.

Procedure

Following the selection process, participants in both groups completed the pre-test questionnaires. The experimental group then participated in ten weekly 60-minute logotherapy sessions delivered in a group format by a trained therapist. The sessions were held at the hospital’s counseling center. The therapist was a clinical psychologist with a master’s degree who served as the first author of this study. During this period, the control group

participants received no psychological intervention but remained on their standard medical treatment plan. At the conclusion of the ten sessions, both groups underwent a post-treatment assessment to measure changes in the dependent variables. The logotherapy intervention was based on the principles of Viktor Frankl's existential analysis and followed a structured 10-session protocol adapted for patients with chronic illness (Frankl, 1984; Rahgozar & Giménez-Llort, 2020). The sessions are summarized in Table 1. To adhere to ethical standards, after the study, a summary workshop on logotherapy was offered to the participants in the control group.

Measures

Death anxiety scale

The templer death anxiety scale (TDAS) (Templer, 1970) is a 15-item questionnaire that evaluates the intensity of death-related fear using a dichotomous (true/false) response format, with total scores ranging from 0 to 15; higher scores indicate greater death anxiety. Its internal consistency reliability (Cronbach's α) in the current sample reached $\alpha=0.81$, consistent with previously

reported acceptable reliability in Iranian populations ($\alpha=0.89$) (Sharif Nia et al., 2014).

Pain catastrophizing scale

The pain catastrophizing scale (PCS) (Sullivan et al., 1995) contains 13 items that capture maladaptive cognitive and emotional responses to pain across three dimensions—rumination, magnification, and helplessness—rated on a 5-point Likert scale (0=not at all to 4=all the time), producing a total score between 0 and 52; higher values reflect stronger catastrophizing tendencies. The Persian version showed good reliability ($\alpha=0.87$), (Rahmati et al., 2017), and Cronbach's α in the present study was 0.85.

Adult hope scale

The adult hope scale (AHS), (Snyder et al., 1996) is a 12-item instrument (with 4 filler items) assessing hope as a cognitive construct through two subscales—agency and pathways—using an 8-point Likert response format; the final score (derived from 8 items) ranges from 8 to 64, with higher scores denoting greater dispositional

Table 1. Summary of the logotherapy intervention program

Session	Title	Detailed Content and Therapeutic Activities
1	Orientation and conceptualization	The initial session focused on creating a trusting therapeutic relationship, presenting the central concept of the "will to meaning," and explaining the foundational principles of logotherapy — namely, freedom of attitude, the pursuit of meaning, and the discovery of meaning in existence. Group guidelines and the importance of confidentiality were also clearly discussed.
2	Self-distancing (noetic dimension)	In the second session, participants were guided to distinguish their sense of self from the illness and its symptoms. Emphasis was placed on activating the resilient capacity of the human spirit, enabling them to perceive MS as an external circumstance rather than a defining aspect of their identity, thereby decreasing the psychological control the disease exerts over their inner experience.
3	Exploring life meanings	identifying unique personal meanings; exploring "creative values" (what we give to the world) and "experiential values" (what we take from the world through beauty, art, or love); keeping a "meaning diary."
4	The tragic triad: Pain, guilt, and death	Directly addressing existential concerns; shifting the perspective on suffering from "Why me?" to "What does life ask of me?"; discussing the "optimism in the face of tragedy" concept to process death anxiety.
5	Past and future orientation	Utilizing "Life Review" to identify past achievements and store them in the "granary of the past" (unchangeable meaning); setting small, achievable meaning-oriented goals for the future despite physical limitations.
6	Freedom and responsibility	Highlighting that while MS limits physical freedom, the freedom to choose one's attitude remains; emphasizing responsibility toward oneself, others, and life's tasks.
7	Dereflection technique	Training participants to shift attention away from somatic symptoms and pain (combatting hyper-reflection); focusing on external stimuli, tasks, and helping others to break the cycle of pain catastrophizing.
8	Socratic dialogue	Using specific questioning to uncover the "noetic" (spiritual) dimension; challenging cognitive distortions related to helplessness and identifying hidden potentials for growth within the context of MS.
9	Paradoxical intention and humor	Introducing the use of self-detachment and humor as tools to reduce anxiety; encouraging patients to "mock" their fears of death or pain to gain psychological distance and emotional control.
10	Synthesis and termination	Summarizing the 10-week journey; reinforcing the sense of "life meaning"; reviewing relapse prevention strategies for coping with future MS relapses; final feedback and closure of the group.

hope. Reliability of the Persian form was previously reported as 0.78 (Nooripour et al., 2022), while internal consistency reliability in this research reached $\alpha=0.84$.

Data analysis

All statistical procedures were carried out using SPSS software, version 27. Mean $\pm$ SD were computed to summarize the characteristics of the study variables. In order to assess the combined effect of the intervention across the dependent variables, MANCOVA was performed. Subsequent univariate analyses of covariance (ANCOVA) were then conducted to evaluate the intervention's specific impact on each outcome variable individually. A type I error rate of $\alpha=0.05$ was used to determine statistical significance.

Results

The participants were 30 women diagnosed with MS who attended the neurology clinic of Golestan Hospital in Ahvaz, Iran. Mean age in the experimental group ($n=15$) was 34.8 ± 7.2 years with disease duration of 6.1 ± 3.4 years. The control group ($n=15$) showed a mean age of 35.4 ± 6.9 years and mean disease duration of 6.4 ± 3.7 years. Independent samples t-tests confirmed that the groups did not differ significantly in age ($t(28)=0.24$, $P=0.813$) or illness duration ($t(28)=0.25$, $P=0.807$), supporting baseline equivalence.

At baseline, the experimental and control groups showed comparable scores on the study variables. Following the 10-session logotherapy intervention, the experimental group showed reductions in death anxiety and pain catastrophizing, along with an increase in hope scores. In contrast, the control group exhibited only small changes in these variables (Table 2).

Prior to conducting the MANCOVA, all necessary assumptions for covariance analysis were thoroughly examined. Results of the Kolmogorov–Smirnov test demonstrated that the distribution of pre- and post-test scores for death anxiety, pain catastrophizing, and hope did not deviate significantly from normality in either group ($P>0.05$). Levene's test for homogeneity of variances showed no statistically significant difference in baseline scores between the two groups ($P>0.05$). Additionally, the assumptions of homogeneity of regression slopes and homogeneity of variance-covariance matrices were satisfied. MANCOVA was then carried out to assess the combined effect of the logotherapy intervention on the three outcome measures, while statistically adjusting for pre-test scores. A significant multivariate effect was observed (Wilks' Lambda=0.16, $F_{3,23}=41.43$, $P<0.001$, $\eta_p^2=0.84$).

Subsequent univariate ANCOVAs were carried out separately for each outcome measure (Table 3). The intervention produced a statistically significant effect on death anxiety ($F_{1,27}=17.99$, $P<0.001$, $\eta_p^2=0.4$), reflecting a large decrease in death-related fear among participants in the experimental condition relative to the control group after accounting for baseline scores. A comparable pattern emerged for pain catastrophizing, with the intervention group exhibiting a significant reduction $F_{1,27}=21.67$, $P<0.001$, $\eta_p^2=0.45$). The largest effect size was found for hope, where the experimental group displayed a clearly greater improvement in hope scores compared with the control group $F_{1,27}=27.7$, $P<0.001$, $\eta_p^2=0.51$). These findings confirm that participation in the 10-session logotherapy program was associated with clinically meaningful improvements across all three targeted psychological constructs.

Table 2. Descriptive statistics for death anxiety, pain catastrophizing, and hope scores in the experimental and control groups at pre-test and post-test

Variables	Group	Mean $\pm$ SD		t	P
		Pre-test	Post-test		
Death anxiety	Control	11 $\pm$ 1.51	10.45 $\pm$ 1.36	1.74	0.091
	Experimental	12.27 $\pm$ 1.39	9.53 $\pm$ 1.13	9.82	0.001
Pain catastrophizing	Control	40.53 $\pm$ 5.71	40 $\pm$ 5.59	0.93	0.364
	Experimental	40.67 $\pm$ 4.95	37.25 $\pm$ 4.95	4.42	0.001
Hope	Control	26.70 $\pm$ 6.58	27.27 $\pm$ 6.46	-1.63	0.123
	Experimental	25.43 $\pm$ 5.42	29.33 $\pm$ 4.97	-6.80	0.001

Table 3. Univariate ANCOVA results for each dependent variable (controlling for pre-test scores)

Variables	Sum of Squares	df	Mean Squares	F	P	η_p^2
Death anxiety	16.75	1	16.75	17.99	0.001	0.4
Pain catastrophizing	61.27	1	61.27	21.67	0.001	0.45
Hope	66.53	1	66.53	27.7	0.001	0.51

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Discussion

The present study sought to evaluate the therapeutic efficacy of logotherapy on death anxiety, pain catastrophizing, and hope among women diagnosed with MS. The results showed that logotherapy leads to significant reductions in death anxiety and pain catastrophizing, alongside a robust increase in levels of hope. These findings are largely consistent with previous research demonstrating the beneficial effects of logotherapy on death anxiety and hope in individuals living with chronic medical conditions (Eskigölek & Kav, 2024; Wang et al., 2025).

The significant reduction in death anxiety can be attributed to specific techniques employed in the 10-session protocol. In session 4, participants directly addressed the tragic triad (pain, guilt, and death) and were guided to shift from “Why me?” to “What does life ask of me?” through the cultivation of tragic optimism. Session 9 further reinforced this change by introducing paradoxical intention and humor to create psychological distance from death-related fears. These concrete techniques enabled participants to reframe their mortality within a broader context of meaning, thereby reducing the intensity of death anxiety (Rahgozar & Giménez-Llort, 2020; Eskigölek & Kav, 2024).

The decrease in pain catastrophizing appears to have resulted from the dereflection technique introduced in session 7, which trained participants to shift attention away from somatic symptoms and hyper-reflection on pain toward external tasks and helping others. In addition, Socratic dialogue in session 8 helped challenge cognitive distortions related to helplessness and magnification of pain. By redirecting attentional resources and fostering a sense of meaning beyond physical suffering, the intervention effectively interrupted the cycle of rumination and catastrophic thinking about pain (Arewasikporn et al., 2018; Webster et al., 2023).

The most pronounced improvement was observed in hope. Sessions 3 and 5 encouraged participants to identify personal meanings, review past achievements (the

“granary of the past”), and set small, meaningful goals for the future despite physical limitations. These activities directly strengthened both the agency and pathways components of Snyder’s hope theory. Session 6 further reinforced a sense of responsibility and freedom of attitude, which appeared to revitalize participants’ motivational resources and dispositional hope (Laranjeira & Querido, 2022; Lee et al., 2022).

Although the results were statistically robust, this study has several limitations. The use of convenience sampling combined with conducting the entire study in one city (Ahvaz) limits the generalizability of the findings to other groups of patients with MS or to different cultural environments. Furthermore, the absence of long-term follow-up assessments makes it impossible to determine the durability of the observed benefits over extended periods. Another important limitation is that the sample included only women; therefore, the findings may not be generalizable to male patients with MS.

The current findings have important theoretical and clinical implications. By demonstrating simultaneous improvements in death anxiety, pain catastrophizing, and hope, the study highlights the interconnected nature of these constructs through the lens of existential meaning. When patients with MS discover a sense of purpose that transcends their physical limitations, it appears to simultaneously alleviate existential fears, reduce maladaptive cognitive responses to pain, and enhance dispositional hope. Clinically, these results support the integration of brief logotherapy protocols into routine care for patients with MS, particularly within cultures where meaning-making and spiritual dimensions are highly valued. Future research should examine whether combining logotherapy with standard medical and rehabilitation services produces additive benefits and whether similar effects are observed in more diverse samples, including male patients and those with greater disease severity.

Conclusion

Overall, the results of this study provide preliminary evidence that logotherapy is a promising psychological intervention for reducing death anxiety and pain catastrophizing while enhancing hope among women with MS. By facilitating the discovery of existential meaning and fostering tragic optimism, the intervention appears to alleviate death-related fears, decrease maladaptive cognitive responses to pain, such as catastrophizing, and improve dispositional hope. These findings suggest potential benefits of incorporating brief, meaning-centered interventions, such as logotherapy into the multidisciplinary care of patients with MS. Future research with larger, more diverse samples and long-term follow-up assessments is needed to confirm the durability and generalizability of these effects.

Ethical Considerations

Compliance with ethical guidelines

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and approved by the Ethics Committee of the [Ahvaz Branch, Islamic Azad University](#), Ahvaz, Iran (Code: IR.IAU.AHVAZ.REC.1404.100). It was also registered in the [Iranian Registry of Clinical Trials \(IRCT\)](#) (Code: IRCT20250619066209N1).

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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