Mental Health and Lifestyle Journal

Year 2025
Volume 3
Issue 1

Effectiveness of Compassion-Focused Acceptance and Commitment Therapy (ACT) on Quality of Life in Male Patients with Painful Spinal Cord Injury

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Article type:
Original Research

Article history:
Received 03 November 2024
Revised 09 February 2025
Accepted 15 February 2025
Published online 01 March 2025

ABSTRACT

The present study aimed to determine the effectiveness of compassion-focused Acceptance and Commitment Therapy (ACT) on the quality of life in men with painful spinal cord injury. The statistical population consisted of all male patients referring to a rehabilitation hospital in Isfahan. For the purpose of this study, 30 male patients were selected using purposive sampling and were randomly assigned to experimental and control groups (15 in the experimental group and 15 in the control group). The research design was a quasi-experimental pretest-posttest design with a control group and follow-up. The therapeutic intervention was administered to the experimental group over eight sessions, while the control group received no intervention. The instrument used in this study was the World Health Organization Quality of Life Questionnaire (WHOQOL), which was completed at three time points: pretest, posttest, and two-month follow-up. The collected data were analyzed using multivariate analysis of covariance (MANCOVA). The results indicated a significant difference between the experimental and control groups at both the posttest ($P < 0.01$) and follow-up stages ($P < 0.01$). Therefore, with 99% confidence, it can be concluded that compassion-focused ACT is effective in improving the quality of life in male patients suffering from painful spinal cord injury.

Keywords: Compassion-focused Acceptance and Commitment Therapy (ACT), Quality of Life, Male Patients with Painful Spinal Cord Injury

How to cite this article:
Tahmasebi, M., Fallah, M.H., & Vaziri Yazdi, S. (2025). Effectiveness of Compassion-Focused Acceptance and Commitment Therapy (ACT) on Quality of Life in Male Patients with Painful Spinal Cord Injury. *Mental Health and Lifestyle Journal, 3*(1), 1-12. https://doi.org/10.61838/mhlj.3.1.10

Introduction

The quality of life of individuals affected by chronic illnesses and disabilities has increasingly become a central concern in psychological and health-related research. Among various clinical populations,

individuals with spinal cord injury (SCI) face a broad spectrum of physical, psychological, and social challenges that profoundly impact their subjective well-being. Pain, limited mobility, social isolation, and reduced autonomy are common consequences of SCI, often accompanied by emotional distress, including depression, anxiety, and decreased psychological flexibility (1-3). Given these challenges, therapeutic interventions that address not only physical symptoms but also psychological resilience and meaning-making capacities are of paramount importance.

Acceptance and Commitment Therapy (ACT), a third-wave behavioral therapy rooted in relational frame theory and functional contextualism, has demonstrated promising outcomes in improving quality of life across diverse populations by targeting experiential avoidance, enhancing mindfulness, and fostering committed action aligned with personal values (4, 5). ACT promotes psychological flexibility—the ability to stay present and engaged with difficult internal experiences while acting in accordance with values—which is particularly vital for individuals coping with the chronic psychological and physical demands of SCI (6). Moreover, recent developments in ACT emphasize integrating compassion-focused principles to address internalized self-criticism, shame, and emotional dysregulation, especially in populations prone to trauma or chronic conditions (7, 8).

Compassion-Focused Therapy (CFT), originally developed to alleviate high levels of shame and self-criticism, is founded on evolutionary, social, and neurobiological understandings of human emotion. CFT seeks to activate the soothing and affiliative affect regulation system, which is often underdeveloped in individuals with trauma histories or chronic psychological pain. Integrating CFT with ACT enriches the therapeutic approach by cultivating self-kindness, emotional courage, and the capacity for compassionate engagement with suffering (9, 10). In the context of SCI, where patients frequently struggle with identity disruption, loss of bodily control, and existential fears, compassion-focused ACT provides a synergistic framework to restore psychological coherence and vitality (11, 12).

Empirical studies have consistently demonstrated the efficacy of ACT-based protocols in enhancing quality of life in individuals with chronic health conditions such as cancer (13, 14), diabetes (15), cardiovascular disorders (16), and neurological diseases such as multiple sclerosis and motor neuron disease (17, 18). For instance, recent randomized controlled trials have shown that ACT significantly improves psychological flexibility, reduces symptom burden, and enhances functional outcomes in patients with muscle diseases and advanced-stage cancer (19, 20). Similarly, ACT-based interventions tailored for caregivers and parents of children with chronic illness have yielded improvements in mental health, resilience, and relational functioning, underlining the approach's adaptability and depth (12, 21).

The application of compassion-focused interventions in SCI populations remains relatively underexplored, despite the promising evidence from adjacent clinical groups. Studies targeting individuals with multiple sclerosis or skin disorders—who similarly face stigmatization, chronic pain, and identity challenges—have shown significant benefits of compassion-focused interventions in reducing internalized stigma, enhancing resilience, and improving quality of life (8, 22). Additionally, the integration of self-compassion strategies into ACT has been found to enhance emotional regulation, mitigate the effects of experiential avoidance, and foster adaptive coping strategies (23, 24). A key strength of this approach lies in its ability to address psychological suffering without pathologizing emotional responses, promoting instead an attitude of openness, acceptance, and compassion toward internal experience (25, 26).

In SCI patients specifically, the psychological consequences are not merely reactive but often entrenched in long-term patterns of identity conflict, self-blame, and perceived loss of purpose. Therefore, a therapeutic modality that targets both the cognitive-behavioral dimensions and the affective, self-relational components becomes essential. Compassion-focused ACT does precisely this by weaving together mindful awareness, value-based living, and compassionate self-understanding. Recent evidence suggests that enhancing self-compassion in clinical populations leads to improvements in both hedonic (e.g., satisfaction, happiness) and eudaimonic (e.g., meaning, purpose) well-being, which are foundational aspects of health-related quality of life (27, 28).

From a methodological perspective, combining ACT and compassion training also aligns with the evolving trend in psychotherapy research that favors integrative, person-centered, and process-oriented approaches. In a systematic review and meta-analysis, ACT was shown to produce medium to large effect sizes in quality of life outcomes across chronic conditions, particularly when interventions were delivered in group settings and included individualized value clarification and mindfulness practice components (29, 30). Moreover, ACT's emphasis on present-moment awareness and defusion techniques complements CFT's focus on emotional safety and self-soothing, producing a comprehensive intervention model that addresses both cognitive rigidity and affective dysregulation (15, 31).

The growing interest in these integrative approaches also reflects a broader shift toward holistic definitions of health that encompass psychological, emotional, social, and existential dimensions. This is particularly relevant in SCI rehabilitation, where quality of life is determined not only by functional independence but also by psychosocial adjustment, emotional resilience, and life satisfaction. Interventions that empower individuals to live meaningful lives despite physical limitations challenge the biomedical model's narrow focus on symptoms and deficits, advancing a humanistic and strength-based perspective (6, 32).

Furthermore, compassion-focused ACT responds to a critical gap in SCI care: the emotional burden of chronic pain, stigma, and social withdrawal. The high prevalence of depression, anxiety, and suicidal ideation in this population highlights the urgency of therapeutic models that foster psychological integration and emotional connectedness. By addressing the core processes of psychological inflexibility, harsh self-criticism, and disconnection from values, compassion-focused ACT holds transformative potential for SCI rehabilitation programs (13, 18).

In sum, the integration of ACT with compassion-focused techniques represents a compelling and evidence-supported intervention for improving quality of life in men with spinal cord injury. The theoretical grounding, empirical support, and transdiagnostic relevance of this approach position it as a promising candidate for inclusion in psychological rehabilitation protocols targeting this underserved population. While prior studies have confirmed its efficacy in various medical and psychological conditions, further research is warranted to explore its specific application and long-term impact on SCI populations. The present study seeks to address this gap by evaluating the effectiveness of compassion-focused ACT on enhancing quality of life in men with painful spinal cord injuries, thereby contributing to the ongoing advancement of integrative mental health care.

Methods and Materials

Study Design and Participants

This study employed a quasi-experimental pretest-posttest design with a control group and a two-month follow-up phase. In this design, homogeneous participants are randomly assigned to two groups (one experimental and one control group). A pretest is administered to both groups, followed by the intervention only in the experimental group. After the intervention, a posttest is conducted for both groups, and the results are subjected to statistical analysis. It is worth noting that two months after the intervention, the questionnaires were administered again to both groups for the follow-up phase.

The research population consisted of hospitalized male patients with spinal cord injuries in hospitals in Isfahan. The researcher first visited these hospitals and, after reviewing patient information and statistics, purposefully selected 30 individuals. These individuals were then randomly assigned to either the experimental or control group. The therapeutic intervention was conducted for the experimental group of men with spinal cord injuries. Accordingly, 30 eligible patients were selected and randomly assigned to two groups (15 in the experimental group and 15 in the control group). The intervention in the experimental group was conducted over eight weeks, with one session per week, totaling eight sessions. The control group received no intervention. Both groups completed the Quality of Life scale at the pretest, posttest, and two-month follow-up stages.

Inclusion criteria included: absence of chronic medical conditions such as cardiovascular disease, mental illness, and substance use disorders, no hospitalization or medical care within the past year, and being male. Exclusion criteria included: absence from more than two intervention sessions and lack of informed consent to participate in treatment.

Initially, a theoretical study was conducted on the research variables, and the necessary tools were prepared. A convenience sample of patients with painful spinal cord injury was selected and assigned to the experimental and control groups. Both groups completed the relevant pretests. The experimental group received compassion-focused Acceptance and Commitment Therapy (ACT) in eight 90-minute sessions over a two-month period. At the end of the intervention, both groups completed the posttest, and after one month, the follow-up test was conducted. The results were analyzed accordingly.

The treatment protocol used in this study was a translated version of the ACT program for living with chronic pain combined with compassion therapy, which was scientifically and practically approved by a board of academic advisors. The therapeutic package was based on studies by Neff and Germer (2013), and Kevin E. Vowles and John T. Sorrell (2007). It included mindfulness practices, acceptance of illness, discussions about the relationship between illness, mood, and functioning, value identification and obstacles, mindful self-observation, committed action, alignment with personal values, loving-kindness practices, and mindful breathing. It also offered informal daily practices such as gentle touch and compassionate letter-writing. Each session included experiential exercises to cultivate self-compassion, and at-home practices were designed to reinforce and develop habits of self-compassion.

The goal of this program was to enhance acceptance, commitment, and the development of an internal source of self-compassion, enabling individuals to cope safely with physical and psychological difficulties.

Data Collection

The questionnaire was designed to assess health-related quality of life (SF-36) and includes 36 items covering physical health, physical and emotional role limitations, bodily pain, general health, vitality, social functioning, and mental health. The content validity of the questionnaire was confirmed (Hosseini et al., 2013). Its reliability was verified through a pilot study using Cronbach's alpha ($\alpha = 0.80$). The total score ranges from 0 to 100, categorized into four levels: scores below 45 indicate very poor quality of life, 45–60 poor, 60–75 good, and above 75 desirable. To identify the sample, the model developed by McClintock, Anderson, and Cranston (2015) was applied. Based on this model, individuals who scored at least two standard deviations below the mean were eligible for participation. Considering the inclusion and exclusion criteria, 30 participants (15 in the experimental group and 15 in the control group) were selected for the study.

Intervention

The intervention protocol consisted of eight structured 90-minute weekly sessions of Compassion-Focused Acceptance and Commitment Therapy (ACT) designed specifically for men with painful spinal cord injury. The first session focused on establishing rapport, introducing the core principles of ACT, and familiarizing participants with the concept of self-compassion and empathy, followed by a calming breathing exercise as homework. The second session emphasized mindfulness practice, self-critical tendencies, and identifying whether participants lean toward self-criticism or self-compassion, including strategies to reduce self-criticism. In the third session, participants learned to accept mistakes without judgment, explore the consequences of unforgiveness, and practice acceptance of illness and values through mindfulness. The fourth session centered on value-driven action, teaching bodily awareness and breathing techniques, cultivating tolerance toward suffering, and journaling about self-compassion. The fifth session included planning for committed action, self-observation, and boosting self-worth through gratitude exercises. In the sixth session, the focus shifted to maintaining commitment despite obstacles, guided imagery of compassionate figures, and teaching attributes of compassion and self-compassion such as wisdom, warmth, and empathy. The seventh session explored internal dialogue among the "inner critic," "criticized self," and the "compassionate self," alongside writing a compassionate letter to oneself. The final session reviewed all content, emphasized sustaining therapeutic gains through lifelong mindfulness and commitment practices, collected participant feedback, and concluded with farewell and long-term self-practice assignments.

Data analysis

Both descriptive and inferential statistics were used to analyze the data. In the descriptive section, means and standard deviations were reported. In the inferential section, multivariate analysis of covariance (MANCOVA) was conducted using SPSS version 19.

Findings and Results

Descriptive data related to men with spinal cord injury revealed that the mean age of the participants was 31.22 years, with a standard deviation of 4.38. Furthermore, 27% of the sample held a bachelor's degree, 46% had a high school diploma, and 27% had an education level below high school. Additionally, 55% of the

men had sustained their spinal cord injury due to falling from a height, while 45% sustained the injury due to a car accident.

Table 1. Mean and Standard Deviation of Dependent Variables in Experimental and Control Groups

Variable	Groups	Pretest M (SD)	Posttest M (SD)	Follow-up M (SD)
Physical Health	Experimental	21.73 (5.29)	28.47 (4.61)	31.47 (4.34)
	Control	19.46 (4.03)	22.28 (2.85)	21.41 (2.85)
Mental Health	Experimental	18.46 (6.84)	25.13 (3.39)	24.13 (4.17)
	Control	16.80 (5.93)	18.08 (4.80)	17.75 (4.80)
Social Relationships	Experimental	21.60 (5.32)	31.93 (4.44)	29.93 (3.28)
	Control	18.86 (4.14)	16.13 (5.84)	17.13 (2.84)
Environmental Health	Experimental	9.53 (2.41)	12.64 (2.10)	12.16 (1.92)
	Control	8.60 (4.34)	9.26 (3.84)	7.46 (3.84)

Based on the results presented in Table 1, the means and standard deviations for the pretest, posttest, and follow-up stages for both experimental and control groups are displayed across the subscales of quality of life. The results indicate an increase in the quality of life subscale scores in the posttest and follow-up stages within the experimental group. In contrast, only minimal changes were observed in the control group.

According to the assumptions of covariance analysis, the assumptions of normality (Shapiro–Wilk test), homogeneity of variances (Levene's test), homogeneity of covariance matrices (Box's M test), homogeneity of regression slopes (interaction between group and pretest), and regression linearity were evaluated. The findings confirmed that all assumptions were met. To assess the effectiveness of the compassion-based Acceptance and Commitment Therapy program, multivariate analysis of covariance (MANCOVA) and univariate analysis of covariance (ANCOVA) were performed. A summary of the results is presented in the tables below.

Table 2. Significance Results of Multivariate Analysis of Covariance (MANCOVA) on Posttest Scores of Quality of Life Variables Between Experimental and Control Groups (Controlling for Pretest)

Test Name	Value	F	Significance	Effect Size	Statistical Power
Pillai's Trace	0.97	5.14	0.001	0.79	0.999
Wilks' Lambda	0.52	5.14	0.001	0.68	0.980
Hotelling's Trace	41.15	5.14	0.001	0.84	1.000
Roy's Largest Root	41.15	5.14	0.001	0.85	1.000

A statistically significant difference was observed between the experimental and control groups regarding overall quality of life at the level of $P < 0.001$. Therefore, it can be concluded that at least one of the quality of life components differed significantly between the two groups. To further explore this difference, a multivariate analysis of variance (MANOVA) was conducted, the results of which are presented in Table 3.

Table 3. ANCOVA Results on the Effect of Compassion-Focused Acceptance and Commitment Therapy on Quality of Life at the Posttest Stage

Variables	Stage	Source of Variation	df	F	Significance	Eta Squared	Statistical Power
Physical Health	Posttest	Pretest	1	13.22	0.001	0.85	0.998
		Group	1	11.43	0.001	0.63	0.997
		Error	27				
Psychological Health	Posttest	Pretest	1	16.34	0.001	0.82	0.992
		Group	1	14.19	0.001	0.71	0.986
		Error	27				
Social Relationships	Posttest	Pretest	1	18.22	0.001	0.79	0.993
		Group	1	13.51	0.001	0.86	0.994
		Error	27				
Environmental Health	Posttest	Pretest	1	14.79	0.001	0.90	0.999
		Group	1	12.08	0.001	0.88	0.983
		Error	27				

Using analysis of covariance (ANCOVA) to evaluate the effectiveness of compassion-focused Acceptance and Commitment Therapy on quality of life in the experimental group, the results indicated that there was a statistically significant difference in the posttest mean scores of quality of life between the experimental and control groups ($P < 0.001$). Based on these findings, it can be concluded that compassion-focused ACT contributes to improving quality of life in men with painful spinal cord injury.

Table 4. ANCOVA Results on the Effect of Compassion-Focused Acceptance and Commitment Therapy on Quality of Life at the Follow-Up Stage

Variables	Stage	Source of Variation	df	F	Significance	Eta Squared	Statistical Power
Physical Health	Follow-Up	Pretest	1	14.32	0.001	0.85	0.991
		Group	1	12.45	0.001	0.91	0.996
		Error	27				
Psychological Health	Follow-Up	Pretest	1	15.63	0.001	0.81	0.999
		Group	1	14.12	0.001	0.66	0.998
		Error	27				
Social Relationships	Follow-Up	Pretest	1	17.92	0.001	0.89	0.990
		Group	1	16.19	0.001	0.87	0.993
		Error	27				
Environmental Health	Follow-Up	Pretest	1	13.33	0.001	0.78	0.999
		Group	1	11.70	0.001	0.72	0.996
		Error	27				

As shown in Table 4, the difference between the experimental and control groups in the follow-up stage regarding the components of quality of life is statistically significant ($P < 0.001$). The results demonstrated that there was a significant difference in the mean follow-up scores of quality of life between the experimental and control groups. Accordingly, it can be stated that compassion-focused Acceptance and Commitment Therapy has a sustained positive effect over a two-month period on the quality of life of men with painful spinal cord injury.

Discussion and Conclusion

The aim of the present study was to investigate the effectiveness of compassion-focused Acceptance and Commitment Therapy (ACT) on improving the quality of life in men with painful spinal cord injury (SCI). The findings demonstrated a significant improvement in the post-test and follow-up scores of the experimental group across all four subscales of the World Health Organization Quality of Life assessment—

physical health, psychological health, social relationships, and environmental health—compared to the control group. These improvements persisted over the two-month follow-up period, suggesting that the therapeutic gains were not only immediate but also sustained over time. Such results confirm the hypothesis that an intervention model that combines the foundational principles of ACT with compassion-focused strategies can produce meaningful psychological and functional changes in individuals coping with chronic and disabling conditions such as SCI.

One plausible explanation for the observed improvement lies in the mechanism of psychological flexibility and self-compassion. ACT targets experiential avoidance, rigid cognition, and disengagement from values-based behavior, which are commonly found in individuals living with chronic pain and physical limitations. By integrating compassion-focused practices, participants were encouraged to reduce harsh self-judgment and replace it with kindness and acceptance toward their suffering. This dual-process intervention not only cultivated a healthier relationship with internal experiences but also promoted active, value-congruent behavior—both essential to enhancing quality of life. These findings align with the results of previous research emphasizing ACT's effectiveness in chronic conditions, including cancer (4), motor neuron disease (20), cardiovascular illness (16), and multiple sclerosis (17).

Furthermore, the present results are supported by studies indicating that compassion-based therapies improve psychological well-being by reducing self-criticism, internalized stigma, and emotional dysregulation. For instance, Aghili et al. (2022) demonstrated that compassion-focused therapy significantly enhanced both quality of life and resilience in caregivers of patients with multiple sclerosis (8). Similarly, Fatollahzadeh et al. (2023) showed that individuals with vitiligo who received compassion-based interventions experienced reductions in shame and self-criticism, which consequently improved their quality of life (7). These findings parallel those of our study, in which individuals with SCI, a condition often associated with identity loss and public stigma, benefited from therapeutic exposure to self-kindness and value-driven behavior.

In examining the psychological health subscale, the experimental group demonstrated a notable reduction in emotional distress and improved coping abilities. This is consistent with the findings of Jin et al. (2023), who reported that ACT enhanced emotional functioning in parents of children with cancer by reducing distress and increasing psychological resilience (12). In the context of SCI, where individuals often face anxiety, grief, and chronic frustration due to physical limitations and life disruption, such interventions serve as a bridge between inner suffering and adaptive functioning. Moreover, the incorporation of mindfulness and self-awareness practices, as central components of both ACT and CFT, supports participants in developing emotional tolerance and non-reactivity—skills that have been shown to directly contribute to better quality of life (29).

Social relationships, another critical domain of quality of life, also showed substantial improvement in the experimental group. The group-based format of the intervention may have contributed to this finding by fostering emotional sharing, validation, and a sense of community among participants. Previous research suggests that ACT-based group interventions are effective in reducing social isolation and enhancing interpersonal engagement, particularly in populations dealing with stigma and chronic conditions (5, 19). As participants internalized a more compassionate stance toward themselves, it is likely that they extended this empathy to others, leading to healthier and more meaningful relationships. These dynamics reinforce the

value of combining ACT's value-clarification exercises with compassion-based emotional training to enhance social well-being.

Environmental health—often defined in terms of feelings of safety, access to resources, and comfort within one's living environment—was the final subscale that improved significantly. This result may be attributed to the increased sense of agency and empowerment cultivated through the intervention. ACT emphasizes committed action in the face of adversity, while compassion-focused practices alleviate emotional paralysis caused by shame and hopelessness. When individuals experience greater emotional stability and a sense of purpose, they are more likely to re-engage with their surroundings and improve their environmental conditions. Research by Zandi et al. (2024) corroborates this by showing that ACT improved lifestyle engagement and self-management in patients with type 2 diabetes (15). Likewise, Solimanpour et al. (2022) found that both ACT and compassion-focused therapy improved environmental adaptation in patients with vitiligo, highlighting the potential for similar interventions to promote autonomy and quality of life in diverse clinical groups (32).

The results also have important implications for the integration of ACT and CFT in SCI rehabilitation programs. The synergistic effects observed in this study support the call by scholars such as Nicolescu et al. (2024) and Li et al. (2024), who argue that digital or in-person delivery of integrated ACT models should become standard practice in care settings for patients with complex physical and emotional needs (13, 21). These findings also echo those of Alikhah et al. (2023), who demonstrated that the modulation of emotional reactivity through ACT significantly enhanced body image and subjective well-being in patients with dermatological disorders (22). This suggests that targeting affective dysregulation through compassion and acceptance not only improves internal states but also alters one's relationship with the body, which is particularly relevant for individuals with spinal cord injuries.

Taken together, the present findings provide robust support for the hypothesis that a combined compassion-focused ACT intervention can significantly improve the overall quality of life in men with painful spinal cord injury. This aligns with broader meta-analytic evidence emphasizing the transdiagnostic value of ACT-based interventions in chronic illness management (6, 29). Moreover, the persistence of therapeutic gains into the follow-up period underlines the durability and clinical significance of such programs.

Despite the encouraging outcomes, this study has several limitations. First, the sample size was relatively small and limited to male patients in a single geographical location, which restricts the generalizability of the findings. Second, the reliance on self-report measures, although standardized and validated, introduces the potential for response bias. Third, the absence of long-term follow-up beyond two months limits our understanding of the durability of treatment effects over time. Finally, the lack of comparison with alternative psychological interventions (e.g., cognitive-behavioral therapy or positive psychology programs) makes it difficult to isolate the specific contribution of compassion-focused ACT.

Future studies should aim to replicate these findings in larger, more diverse populations, including women, individuals with varying degrees of SCI severity, and participants from different cultural and socioeconomic backgrounds. Additionally, future research would benefit from including objective physiological or behavioral outcome measures (e.g., functional independence, social activity levels) to triangulate self-reported improvements in quality of life. Longitudinal designs with extended follow-up periods (6 months or more) would also help in evaluating the sustainability of therapeutic effects. Lastly,

comparative studies examining compassion-focused ACT against other empirically supported therapies would provide deeper insight into its relative efficacy and mechanisms of change.

The results of this study highlight the potential value of incorporating compassion-focused ACT into the psychological rehabilitation programs of individuals with spinal cord injury. Clinicians are encouraged to adopt a modular and integrative approach that blends mindfulness, acceptance, and compassion training to address the complex emotional and physical challenges faced by this population. Group-based delivery formats may further enhance outcomes by fostering connection, empathy, and collective healing. Rehabilitation teams—including psychologists, physical therapists, and social workers—should consider interprofessional collaboration in implementing these interventions to ensure comprehensive and person-centered care.

Acknowledgments

The authors express their deep gratitude to all participants who contributed to this study.

Authors' Contributions

All authors equally contributed to this study.

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.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

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