

## Extended Abstract

**Journal of Behavior Modification Studies (JBMS), 1(3), 2025**



**Vol. 1, No.1, Autumn 2024**

**Submitted Date: 2025-01-17**

**Accepted Date: 2025-04-19**

[https://jbms.guilan.ac.ir/article\\_8347.html?lang=en](https://jbms.guilan.ac.ir/article_8347.html?lang=en)

## Research paper

# **The Effectiveness of Cognitive-Behavioral Therapy on Negative Orientation, Anxiety Sensitivity, and Self-Compassion in Patients with Fibromyalgia**

**Dr. Farzin Bagheri Sheykhgafshe**

Ph.D. in Psychology, Faculty of Humanities, Tarbiat Modares University, Tehran, Iran

**Khazar Tajbakhsh**

MSc Student, Department of Psychology, University of Milano-Bicocca, Milan, Italy

**Dr. Abbas Ali Hosseinkhanzadeh**

Professor, Department of Psychology, Faculty of Literature and Humanities, University of Guilan, Rasht, Iran

Corresponding Author: [khanzadehabbas@guilan.ac.ir](mailto:khanzadehabbas@guilan.ac.ir)

## Introduction

Fibromyalgia is a chronic, multifaceted disorder of the central nervous system characterized by widespread musculoskeletal pain, persistent fatigue, sleep disturbances, and significant psychological comorbidities such as depression, generalized anxiety, and emotional dysregulation (Antonelli et al., 2025). Although no structural damage is typically observed, the psychological burden of fibromyalgia is profound and contributes to impaired functioning and reduced quality of life (Chang et al., 2019). Two important cognitive-emotional factors in fibromyalgia are negative problem orientation and anxiety sensitivity, both of which are associated with increased pain perception, maladaptive coping strategies (e.g., rumination, avoidance), and diminished psychological well-being (Levy et al., 2024).

Emerging evidence also highlights the protective role of self-compassion in fostering emotional resilience, promoting adaptive emotion regulation, and mitigating pain-related distress in fibromyalgia patients (Fortuna et al., 2025). In this context, Cognitive-Behavioral Therapy (CBT) has been recognized as an evidence-based intervention that effectively targets maladaptive beliefs, reduces negative problem orientation and anxiety sensitivity, and enhances self-compassion (Cojocaru et al., 2024). By incorporating cognitive restructuring and behavioral techniques, such as stress management and emotion regulation, CBT aims to interrupt the pain-distress cycle and improve overall functioning (Climent-Sanz et al., 2022). However, due to the clinical heterogeneity of fibromyalgia and individual differences in treatment response, further empirical studies are needed to assess the efficacy of CBT in diverse patient populations (Prados et al., 2022). Accordingly, the present study examined the effects of CBT on negative problem orientation, anxiety sensitivity, and self-compassion among individuals diagnosed with fibromyalgia.

## Method

This study employed a quasi-experimental design with a pretest-posttest structure and included an experimental and a control group. The statistical population consisted of patients diagnosed with fibromyalgia who visited pain clinics in Rasht during 2024 (1403). Participants were recruited from three clinics using a convenience sampling method. From newly admitted patients, 36 individuals were selected and randomly assigned to either the experimental group ( $n = 18$ ) or the control group ( $n = 18$ ). The sample size was determined using G\*Power software version 3.1.9.2 (Faul et al., 2007).

Inclusion criteria included the absence of major observable physical or psychological disorders, not currently receiving intensive physical or psychological treatments, basic literacy (at least middle school education), and no use of psychiatric medications. Exclusion criteria consisted of missing more than two

sessions, disruptive behavior, lack of cooperation, noncompliance with assignments, and recurrence of illness. All ethical considerations, including informed consent, confidentiality, and voluntary participation, were observed by the Helsinki Declaration. Participants were assured that their information would be analyzed in aggregate form only.

The research instruments included the Negative Problem Orientation Questionnaire (NPOQ; Robichaud & Dugas, 2008), the Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007), and the Self-Compassion Scale (SCS; Neff, 2003). The experimental group underwent 10 sessions of CBT, each lasting 90 minutes (Thorn, 2017). The control group received no intervention during this period. Data were analyzed using multivariate analysis of covariance (MANCOVA).

## Results

The mean ages of participants in the experimental and control groups were 41.86 and 42.30 years, respectively. Of the 36 participants, 16 were single and 20 were married. Regarding economic status, 21 reported poor financial conditions, 10 moderate, and 5 good. Females comprised 65% of the sample. Table 1 presents the descriptive statistics for pretest and posttest scores across both groups. The Shapiro-Wilk test results indicated that the distributions of all variables were normal in both groups, as none of the test statistics reached statistical significance ( $P > .005$ ). Therefore, parametric analyses were deemed appropriate.

**Table 1. Descriptive statistics of pretest and posttest scores in the experimental and control groups**

Variable	Test Status	Group	Mean	Std. Deviation	Shapiro-Wilk (S-W)	P-value
Negative Orientation	Pre-test	Experimental	41.66	1.87	0.96	0.067
		Control	41.55	1.78	0.93	0.128
	Post-test	Experimental	38.05	2.83	0.96	0.071
		Control	41.72	1.77	0.94	0.065
Somatic Factor	Pre-test	Experimental	19.55	1.54	0.97	0.074
		Control	19.66	1.67	0.94	0.060
	Post-test	Experimental	15.88	2.33	0.97	0.081
		Control	19.45	1.45	0.95	0.081
Cognitive Factor	Pre-test	Experimental	18.50	2.08	0.91	0.073
		Control	18.56	1.94	0.95	0.052
	Post-test	Experimental	15.05	1.63	0.93	0.060
		Control	18.39	1.81	0.92	0.078
Social Factor	Pre-test	Experimental	20.21	1.47	0.91	0.063
		Control	20.12	1.69	0.90	0.071
	Post-test	Experimental	16.17	1.50	0.90	0.082
		Control	20.27	1.63	0.95	0.051
Self-Compassion	Pre-test	Experimental	55.45	1.49	0.94	0.057
		Control	55.34	1.50	0.92	0.075
	Post-test	Experimental	59.56	2.36	0.91	0.056
		Control	55.54	1.42	0.88	0.081

Results from the analysis of covariance indicated a significant effect of the independent variable on the dependent variable. Specifically, the experimental and control groups demonstrated statistically significant differences in negative problem orientation, anxiety sensitivity (including its physical, cognitive, and social components), and self-compassion. The F-values were statistically significant at the 0.01 level for all variables: negative problem orientation ( $F = 71.57$ ), physical component of anxiety sensitivity ( $F = 64.17$ ), cognitive component ( $F = 59.44$ ), social component ( $F = 82.43$ ), and self-compassion ( $F = 39.10$ ). The calculated effect sizes showed that 71 percent of the variance in negative problem orientation, 68 percent in the physical component, 67 percent in the cognitive component, 74 percent in the social component, and

57 percent in self-compassion were due to the effect of the independent variable. Furthermore, the statistical power of the test was 1.00, indicating that the sample size was sufficient. These findings suggest that CBT significantly reduced negative problem orientation and anxiety sensitivity while increasing self-compassion among individuals diagnosed with fibromyalgia.

## Discussion and Conclusion

The present study investigated the effectiveness of CBT on negative problem orientation, anxiety sensitivity, and self-compassion in patients with fibromyalgia. The findings revealed that CBT significantly reduced negative problem orientation, which reflects a habitual tendency to interpret life events pessimistically (Fortuna et al., 2025). This reduction is especially important for individuals with fibromyalgia, who often suffer from chronic pain and physical limitations that contribute to psychological distress. By helping patients identify and modify distorted beliefs about pain, disability, and the future, CBT promotes a more realistic and adaptive mindset. This shift reduces self-blame and anxiety, enhances emotional resilience, and encourages greater engagement in treatment and daily life activities, ultimately improving quality of life (Prados et al., 2022).

The study also demonstrated that CBT significantly reduced anxiety sensitivity, which refers to the fear of bodily symptoms related to anxiety (Climent-Sanz et al., 2022). Lowering this sensitivity enabled patients to react more calmly to physical sensations, decreasing psychological tension and enhancing control over their pain experiences. In addition, the therapy led to a meaningful increase in self-compassion, helping patients develop a kinder and more accepting attitude toward themselves in the face of suffering (Cojocaru et al., 2024). This emotional shift played a protective role against negative psychological outcomes and encouraged patients to care for themselves more effectively. Together, these changes show that CBT not only alleviates physical symptoms but also strengthens key psychological processes, leading to better emotional regulation, improved resilience, and a higher overall quality of life for individuals living with fibromyalgia.

## Ethical Considerations

### Ethical Code

This study was conducted in full compliance with ethical research principles and guidelines for the protection of participants' rights. All participants took part in the study voluntarily and with informed consent, and the confidentiality of their information was fully ensured. The research protocol was reviewed and approved by the Psychology Department of the University of Guilan. All stages of the research were carried out with respect for the participants' rights and human dignity, and without causing any physical or psychological harm.

## Financial Support

This study did not receive any financial support.

## Authors' Contributions

Farzin Bagheri Sheykhgafshe was responsible for the research design, data collection, statistical analysis, and drafting of the initial manuscript. Khazar Tajbakhsh contributed to data analysis, writing the literature review, and revising the final version of the manuscript. Abbas Ali Hosseinkhanzadeh provided scientific supervision, guided the analytical process, and edited the final manuscript.

## Conflicts of Interest

The authors declare no conflict of interest in this study.

## Acknowledgments

The authors sincerely thank all individuals and patients who supported this study, especially the participants who generously contributed their time and cooperation.

## References

Antonelli, A., Bianchi, M., Fear, E. J., Giorgi, L., & Rossi, L. (2025). Management of Fibromyalgia: Novel Nutraceutical Therapies Beyond Traditional Pharmaceuticals. *Nutrients*, 17(3), 530. [\[Link\]](#)

- Chang, E. C., Lucas, A. G., Chang, O. D., Angoff, H. D., Li, M., Duong, A. H., ... & Hirsch, J. K. (2019). Relationship between future orientation and pain severity in fibromyalgia patients: Self-compassion as a coping mechanism. *Social Work, 64*(3), 253-258. [\[Link\]](#)
- Climent-Sanz, C., Valenzuela-Pascual, F., Martinez-Navarro, O., Blanco-Blanco, J., Rubi-Carnacea, F., Garcia-Martinez, E., ... & Gea-Sanchez, M. (2022). Cognitive behavioral therapy for insomnia (CBT-i) in patients with fibromyalgia: a systematic review and meta-analysis. *Disability and Rehabilitation, 44*(20), 5770-5783. [\[Link\]](#)
- Cojocaru, C. M., Popa, C. O., Schenk, A., Suciu, B. A., & Szasz, S. (2024). Cognitive-behavioral therapy and acceptance and commitment therapy for anxiety and depression in patients with fibromyalgia: A systematic review and meta-analysis. *Medicine and Pharmacy Reports, 97*(1), 26. [\[Link\]](#)
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods, 39*(2), 175-191. [\[Link\]](#)
- Fortuna, J., Pinto, A. M., da Silva, J. A., Geenen, R., & Castilho, P. (2025). Exploring the role of shame and self-compassion on the link between fibromyalgia symptoms and depression: Insights from mediation and moderation analyses. *Journal of Health Psychology, 135*91053251331286. [\[Link\]](#)
- Levy, S., Ohayon, S., Avitsur, R., & Geller, S. (2024). Psychological distress in women with fibromyalgia: The roles of body appreciation, self-compassion, and self-criticism. *International Journal of Behavioral Medicine, 1*-9. [\[Link\]](#)
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223-250. [\[Link\]](#)
- Prados, G., Miró, E., Martínez, M. P., Sánchez, A. I., Pichot, V., Medina-Casado, M., & Chouchou, F. (2022). Effect of cognitive-behavioral therapy on nocturnal autonomic activity in patients with fibromyalgia: A preliminary study. *Brain sciences, 12*(7), 947. [\[Link\]](#)
- Robichaud, M., & Dugas, M. J. (2005). Negative problem orientation (Part II): Construct validity and specificity to worry. *Behaviour Research and Therapy, 43*(3), 403-412. [\[Link\]](#)
- Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R., ... & Cardenas, S. J. (2007). Robust dimensions of anxiety sensitivity: development and initial validation of the Anxiety Sensitivity Index-3. *Psychological assessment, 19*(2), 176. [\[Link\]](#)
- Thorn, B. E. (2017). Cognitive therapy for chronic pain: a step-by-step guide. Guilford Publications. [\[Link\]](#)