


The Effectiveness of Metacognitive Therapy on Dysfunctionalities in Women with Premenstrual Dysphoric Disorder

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ABSTRACT

Objective: The aim of this study was to evaluate the effectiveness of metacognitive therapy on dysfunctions in women suffering from premenstrual dysphoric disorder.

Method: This quasi-experimental research used a pre-test, post-test, and follow-up design with a control group. The population consisted of female dentistry students at the Islamic Azad University diagnosed with premenstrual dysphoric disorder in 2022. A sample of 30 women was selected through convenience sampling. The experimental group received metacognitive training over 12 sessions lasting 60 minutes each week, while the control group was placed on a waiting list. Data were collected using the Weisman and Beck Dysfunctional Attitude Scale (1987) and analyzed using repeated measures ANOVA through SPSS software.

Findings: Results indicated that metacognitive therapy was effective in reducing dysfunctions. The eta-squared statistic also suggested that approximately 24.3% of the reduction in dysfunctions was attributable to the effectiveness of metacognitive therapy.

Conclusions: Metacognitive therapy can be deemed effective in treating dysfunctions in women with premenstrual dysphoric disorder and can be used to alleviate psychological problems in these patients.

Keywords: *Metacognitive Therapy, Dysfunctions, Premenstrual Dysphoric Disorder, Women.*

1. Introduction

Premenstrual dysphoric disorder (PMDD) encompasses a cyclic occurrence of physical, cognitive, emotional, and behavioral symptoms during the luteal phase of the menstrual cycle that subside with the onset of menstruation or shortly thereafter (Puthusserry & Delariarte, 2023). Studies have shown that while 75% of women in their

reproductive years are affected by premenstrual symptoms (Kulkarni et al., 2022), between 5 to 8% suffer from severe forms of the disorder, impacting 3 to 8% of women per menstrual cycle (Acikgoz et al., 2017; Erbil & Yücesoy, 2023). The definition of PMDD varies in terms of timing, types, and severity of symptoms (Montazeri et al., 2019; Sharma et al., 2022). For instance, the tenth edition of the International Classification of Diseases by the World Health

Organization refers to PMDD as a term that includes any premenstrual symptoms such as tension or migraines, irrespective of their type or severity (Sao et al., 2020). PMDD can disrupt the normal lives of women for several days (Sharma et al., 2022). Studies have indicated that individuals experiencing premenstrual disorders show higher levels of emotional dysregulation (Wu et al., 2016), feelings of loneliness, dysfunctional attitudes, and lower tolerance for psychological distress compared to those who do not experience these disorders (Maddineshat et al., 2016; Ussher & Perz, 2017).

Research suggest that women with PMDD face unique psychosocial issues, with dysfunctional attitudes being one of these psychological factors. Dysfunctional attitudes, attitudes, and beliefs that predispose an individual to depression or general emotional and psychological turmoil, are shaped by experiences and condition the individual to interpret situations in an excessively negative and ineffective manner (Kërçeli et al., 2013; Kulkarni et al., 2022). These cognitive schemas about oneself and the external world act as a predisposing factor in determining maladaptive behaviors and reduce cognitive and emotional processing, thereby affecting individual and social functioning (Brouwer et al., 2019). Early life experiences related to perceived threats and adversities can contribute to the formation of these beliefs, ultimately leading to chronic and distressing behavioral patterns.

A range of biopsychomedical interventions such as antidepressants, anti-anxiety medications, and hormonal treatments are employed (Sharma et al., 2022); although these may reduce premenstrual symptoms, none address the complex underlying mechanisms of premenstrual distress and discomfort (Kulkarni et al., 2022). Consequently, psychological and non-pharmacological treatments have been developed to improve and alleviate the symptoms of premenstrual disorders, including metacognitive therapy (Puthusserry & Delariarte, 2023). This model suggests that negative thoughts and feelings are transient; however, when an individual responds to them with cognitive attention syndrome, it may lead to prolonged psychological distress and unintentionally exacerbate negative affect (Batmaz & Altınöz, 2023). As stated, PMDD can affect the psychological and physical characteristics of those involved. Thus, any factor or intervention capable of influencing and improving these variables can create better conditions for the psychological state of affected individuals, leading to more appropriate coping with the disorder and improving their issues during and prior to menstruation. Metacognitive

therapy has been identified as one of the effective interventions for reducing symptoms (Moeini et al., 2021; Natalini et al., 2021)

Over the past two decades, cognitive-behavioral methods have introduced a new wave in psychology called metacognitive therapy, developed to address the theoretical gaps in cognitive theories. Metacognitive therapy, a novel approach in recent years, has gained global acceptance due to its unique features, including limited number of treatment sessions, structured format, focus on cognitive processes rather than content, and the design of specific techniques (Natalini et al., 2021). Research highlights the impact of this treatment on reducing components of the cognitive attention syndrome, a focal point of metacognitive therapy associated with vulnerability to emotional disorders (Hagen et al., 2017). Given this background, the present study seeks to answer whether metacognitive therapy is effective in reducing dysfunctional attitudes in women with premenstrual dysphoric disorder.

2. Methods

2.1. Study design and Participant

This study was a quasi-experimental investigation with a pre-test–post-test design that included a control group. The statistical population of this research comprised female dentistry students at Islamic Azad University diagnosed with premenstrual dysphoric disorder in 2022. Participants were selected from among these students using convenience sampling. Sample size calculation was performed using Cohen's formula (1981). The study initially included 30 participants divided into two groups of 15 (15 in the experimental group and 15 in the control group). The inclusion criteria for the study were: 1) informed consent to participate in the study; 2) confirmation of the disorder based on a screening questionnaire (cut-off point of 28 and above); 3) no medication for menstrual issues prior to the study; 4) no use of tobacco, drugs, or cigarettes; and the exclusion criteria were: 1) use of psychiatric or psychoactive drugs; 2) absence from more than two therapy sessions; 3) participation in other courses or therapeutic interventions concurrent with the study; 4) having psychiatric disorders based on self-report. Female dentistry students at Islamic Azad University were diagnosed with premenstrual dysphoric disorder using a screening questionnaire. Out of those diagnosed, 30 participants were selected based on inclusion criteria and randomly assigned into two groups, intervention (15 participants) and control (15 participants).

The experimental group received metacognitive training over 12 sessions lasting 60 minutes each on a weekly basis, while no specific actions were taken for the control group. During the study, ethical considerations included ensuring confidentiality of participant information by research coordinators and assistants, offering results to educational and therapeutic centers upon request, assuring participants about the confidentiality of their information, fully explaining the research goals, providing study results after completion, freedom for participants to withdraw at any time, ensuring no harm or financial damage to participants, and assurance of compensation for any potential psychological, social, physical, or financial harm.

2.2. Measures

2.2.1. Dysfunctional Attitude

This questionnaire was developed by Weissman and Beck in 1987. It consists of 26 items scored on a 7-point Likert scale. The scale includes four subscales: Achievement - Perfectionism (items 3, 6, 7, 11, 10, 9), Need for Approval (items 1, 2, 4, 5, 8, 12-13), Pleasing Others (items 19, 20, 21, 22, 23, 24, 25-26), and Vulnerability - Self-Evaluation (items 14, 15, 16, 17-18). The validity and reliability of the Dysfunctional Attitude Scale in normal and clinical populations have been demonstrated, with a Cronbach's alpha of 0.85 and construct validity correlations of 0.47 with the Beck Depression Inventory and the Automatic Thoughts Questionnaire (Beck et al., 1991; as cited by Mousavi et al., 2012). In a study conducted by Ebrahimi and Mousavi on the "Psychometric Properties of the 26-item Dysfunctional Attitudes Scale (DAS-26) in Patients with Mood Disorders," 14 items from the original 40-item version were eliminated based on factor analysis and item-total correlations, and the 26-item version was re-evaluated. The factor structure included four valid factors renamed as Achievement - Perfectionism, Need for Approval, Pleasing Others, and Vulnerability - Self-Evaluation. Concurrent criterion validity was established through correlations with the total GHQ-28 score of 0.56 and with its subscales of somatization, anxiety, social dysfunction, and depression, respectively scoring 0.45, 0.53, 0.48, and 0.57, and with psychiatric diagnosis 0.55. The overall Cronbach's alpha for the scale was found to be 0.92 (Kërqeli et al., 2013; Mami et al., 2015). Cronbach's alpha reported in the current study was 0.83.

2.2.2. Premenstrual Symptoms

Designed by Steiner et al. (2003), this tool assesses the syndrome of premenstrual symptoms. It consists of 19 questions divided into two parts (the first part includes 14 symptoms related to mood, physical, and behavioral aspects, and the second part measures the impact of these symptoms on the individual's life with 5 questions). For a diagnosis of premenstrual dysphoria, three conditions must be met: 1) at least one severe case among items 1 to 4; 2) in addition to the previous, at least four moderate to severe cases among items 1 to 4; 3) one severe case in the part measuring the impact of symptoms on life (the last 5 items). The reliability of this tool was indicated by a Cronbach's alpha of 0.9 (Montazeri et al., 2019). The Cronbach's alpha reported in the current study was 0.84.

2.3. Interventions

2.3.1. Metacognitive Training

In this study, the metacognitive training program by Wells was used (Nateghi et al., 2019; Salahshour Bonab et al., 2022).

Session 1: Introduction and Conceptualization of the Disorder, Induction of Metacognitive Style

The first session focuses on introductions and establishing rapport with the participants. The therapist explains the concept of premenstrual dysphoric disorder and introduces metacognitive therapy. This session includes an overview of how metacognitive strategies can be applied to manage symptoms and thoughts associated with the disorder.

Session 2: Preparing the Group for Therapy, Conducting Thought Suppression Experiment

The second session prepares participants for the therapeutic process and involves a practical demonstration of the thought suppression experiment. This exercise helps illustrate how trying to suppress certain thoughts can often increase their intensity, demonstrating a key metacognitive principle.

Session 3: Case Formulation, Introduction to the Model, and Thought Suppression Experiment

During the third session, individual case formulations are developed, which involve identifying specific dysfunctional beliefs related to uncontrollability and risk. The session revisits the thought suppression experiment and introduces practices like detached mindfulness and postponing worry, along with assigning relevant homework.

Session 4: Review Homework, Continue Preparation, and Challenge Beliefs of Uncontrollability

The fourth session starts with a review of the assigned homework. The therapist continues to prepare the group if needed and revisits verbal and behavioral reattribution related to feelings of uncontrollability. Homework for continuing the postponement of worry and introducing the loss of control experiment is assigned.

Session 5: Review Homework, Further Challenge Beliefs of Uncontrollability

This session reviews the homework and continues to challenge the beliefs around uncontrollability with various evidence and practical experiments of losing control during the session. The group also examines and stops nonadaptive control and avoidance behaviors. Homework involves continuing worry postponement and reversing avoidance behaviors.

Session 6: Review Homework, Continue Challenging Beliefs of Uncontrollability and Danger

In the sixth session, the therapist reviews the homework and continues to challenge beliefs about uncontrollability as needed. The session introduces challenges to beliefs about danger and includes exercises for inducing loss of control or self-harm through worry experiments. Homework involves inducing worry to test perceived dangers.

Session 7: Review Homework, Continue Challenging Beliefs About the Dangers of Worry

Session seven reviews homework and continues to challenge beliefs related to the dangers of worrying. It includes behavioral experiments that challenge these beliefs directly. Homework involves further behavioral experiments to challenge these danger-related beliefs.

Session 8: Review Homework, Emphasize Reversing Any Remaining Maladaptive Strategies

The eighth session reviews homework and continues to challenge any remaining maladaptive beliefs related to danger. The focus is on reversing any maladaptive strategies that are still in use. Homework involves continued behavioral experiments challenging these beliefs.

Session 9: Review Homework, Start Challenging Positive Beliefs

In the ninth session, if negative beliefs have been effectively addressed, the focus shifts to challenging any positive beliefs that may perpetuate dysfunction. Homework

includes implementing strategies of discrepancy and other behavioral experiments to challenge positive beliefs.

Session 10: Review Homework, Continue Challenging Positive Beliefs

The tenth session continues with the review of homework and further challenges to positive beliefs. It includes conducting discrepancy strategies during the session. Homework involves behavioral experiments to increase and decrease worry levels.

Session 11: Review Homework, Work on Reversing Remaining Symptoms

Session eleven involves a review of homework and focuses on reversing any remaining symptoms through strategies of discrepancy implemented during the session. The challenge to positive beliefs continues. Homework includes writing a summary sheet of the therapy by the patient.

Session 12: Review Homework, Work on Relapse Prevention Plan

The final session reviews the homework and focuses on developing a relapse prevention plan. It involves reinforcing alternative plans and clearly explaining them with examples. Planning for booster sessions is discussed. Homework involves identifying continuous applications of the therapy.

2.4. Data Analysis

In this study, descriptive data collected from the tests were presented using frequency distribution tables, central tendency measures, and measures of dispersion. For data analysis, given the nature of the variables and the research hypotheses, a multivariate analysis of covariance (MANCOVA) was performed.

3. Findings and Results

The age range for participants in the experimental group was from 20 to 38 years, with a reported mean age of 28.5 years and a standard deviation of 4.96. In the control group, the ages ranged from 20 to 39 years, with a mean of 29.8 years and a standard deviation of 5.57. Given that the significance level was greater than 0.05, no statistically significant age differences were observed between the two groups, indicating age homogeneity.

Table 1

Mean and Standard Deviation of Dysfunctional Scores Among Groups Pre and Post Intervention

| Component | Group | Pre-test Mean | Pre-test SD | Post-test Mean | Post-test SD | Follow-up Mean | Follow-up SD |
|---------------------------------|--------------|---------------|-------------|----------------|--------------|----------------|--------------|
| Achievement - Perfectionism | Experimental | 15.4 | 0.915 | 13.6 | 2.38 | 13.42 | 2.40 |
| | Control | 14.8 | 0.941 | 15.06 | 1.09 | 15.10 | 1.12 |
| Need for Approval | Experimental | 15.6 | 1.24 | 13.8 | 2.17 | 13.64 | 2.20 |
| | Control | 15.2 | 0.703 | 15.9 | 0.457 | 15.30 | 0.48 |
| Pleasing Others | Experimental | 15.1 | 1.24 | 13.4 | 2.38 | 13.12 | 2.42 |
| | Control | 15.3 | 0.723 | 15.1 | 0.833 | 15.00 | 0.90 |
| Vulnerability - Self-Evaluation | Experimental | 15.7 | 1.09 | 14.8 | 1.93 | 14.10 | 1.96 |
| | Control | 15.1 | 0.833 | 15.6 | 1.12 | 15.20 | 1.18 |
| Total | Experimental | 61.9 | 1.98 | 59.8 | 1.59 | 59.50 | 1.63 |
| | Control | 60.8 | 1.59 | 60.8 | 2.24 | 60.30 | 2.30 |

This study explored the effectiveness of metacognitive therapy on dysfunctional beliefs in women with premenstrual dysphoric disorder. The analysis employed pre-tests and post-tests to evaluate changes in dysfunctional beliefs among experimental and control groups. Initially, no significant differences were observed between the two

groups in pre-test measures. However, post-intervention results revealed significant differences between the intervention and control groups. The homogeneity of variances was confirmed using Levene's test, which indicated that variances were homogeneous across all components of dysfunctional beliefs ($p > .05$).

Table 2

MANCOVA Results for Post-test Variables

| Source of Change | Variable | Sum of Squares | Degrees of Freedom | Mean Square | F-value | Significance Level | Eta Squared |
|------------------|---------------------------------|----------------|--------------------|-------------|---------|--------------------|-------------|
| Group | Achievement - Perfectionism | 27.7 | 1 | 27.7 | 8.87 | .007 | .270 |
| | Need for Approval | 23.4 | 1 | 23.4 | 17.1 | .001 | .417 |
| | Pleasing Others | 37.9 | 1 | 37.9 | 13.7 | .001 | .364 |
| | Vulnerability - Self-Evaluation | 10.7 | 1 | 10.7 | 12.1 | .002 | .337 |
| Error | Achievement - Perfectionism | 74.9 | 24 | 3.12 | | | |
| | Need for Approval | 32.8 | 24 | 1.36 | | | |
| | Pleasing Others | 66.4 | 24 | 2.76 | | | |
| | Vulnerability - Self-Evaluation | 21.1 | 24 | 0.88 | | | |

Multivariate analysis of covariance showed that after controlling for pre-test effects, Wilks' Lambda was significant at the .01 level (Wilks' Lambda = .394, $F = 8.08$, $p = .001$, $\eta^2 = .606$). This suggests that there were significant differences between the control and experimental groups in at least one of the study variables. Specific differences across components were further analyzed in Table 2. The analysis indicated that post-test scores for dysfunctional beliefs were significantly different between the experimental and control groups, showing a marked improvement in the experimental group after the intervention. Thus, it can be asserted that metacognitive therapy was effective in reducing dysfunctional beliefs. Detailed results demonstrated that approximately 27% of the reduction in Achievement - Perfectionism, 41.7% in the Need for Approval, 36.4% in

Pleasing Others, and 33.7% in Vulnerability - Self-Evaluation were attributable to the efficacy of the metacognitive therapy.

4. Discussion and Conclusion

The current research aimed to assess the efficacy of metacognitive therapy on dysfunctional beliefs in women suffering from premenstrual dysphoric disorder. The results supported the effectiveness of metacognitive therapy in reducing dysfunctional beliefs in these women. The findings are consistent with those of other researchers (Babakhanzadeh et al., 2019). This study posits that metacognition could serve as a strong predictor for the escalation of dysfunctional beliefs. When individuals suffering from these beliefs are unable to identify the source

of their distress or emotional turmoil, their stress increases. Furthermore, metacognitive beliefs could potentially act as a factor in escalating dysfunctional beliefs by promoting beliefs that lead to the growth of ineffective coping strategies, thereby increasing negative and distressful states in individuals. Metacognitive therapy, by positively influencing the adoption of effective coping strategies, proves beneficial in reducing dysfunctional beliefs.

Moreover, Wells identifies metacognitive beliefs as a set of passive thoughts that are repetitive and focus on the causes and consequences. These negative thinking patterns are based on automatic cognitive habits that often manifest as rumination and are inefficiently mobilized to avoid depression or problematic situations such as premenstrual dysphoria. Inhibition of negative thinking during metacognitive therapy can explain the reduction in dysfunctional beliefs observed in this study (Wells & Capobianco, 2020; Wells et al., 2023).

5. Suggestions and Limitations

Furthermore, it should be noted that mediating variables such as the impact of subcultures and socio-economic conditions could influence the outcomes of the current research. The sample consisting solely of female dentistry students from a private university limits the generalizability of the results to other populations and settings. Future research should consider these mediating variables and sample other social environments. Additionally, it is recommended that metacognitive training be incorporated as part of the educational programs in clinical settings.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

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

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