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The Effectiveness of Cognitive Behavioral Therapy on Rumination, and Quality of Life among Girls with Body Dysmorphic Symptoms

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A B S T R A C T

The objective of this study was to evaluate the effectiveness of Cognitive Behavioral Therapy (CBT) in reducing rumination and enhancing quality of life among girls diagnosed with Body Dysmorphic Disorder (BDD). This randomized controlled trial involved 60 participants, diagnosed with BDD, who were recruited from the Pouyesh Clinic in Tehran in 2023. Participants were randomly assigned to either a CBT intervention group or a control group, with each group comprising 30 participants. The intervention consisted of ten 75-minute sessions of CBT specifically tailored to address rumination and improve quality of life. Data were collected at baseline, immediately post-intervention, and at a three-month follow-up, and analyzed using Analysis of Variance with Repeated Measurements and Bonferroni post-hoc tests. The CBT intervention led to a significant reduction in rumination, with mean scores decreasing from 18.45 (SD = 3.52) pre-treatment to 13.67 (SD = 3.01) post-treatment, and slightly rising to 14.22 (SD = 2.86) at follow-up. Quality of life significantly improved, increasing from a mean of 42.58 (SD = 4.45) pre-treatment to 49.73 (SD = 4.12) post-treatment, with a slight reduction at follow-up to 48.89 (SD = 3.98). Statistical analysis confirmed significant time effects ($F(2, 116) = 19.45$, $p < 0.001$, $\eta^2 = 0.15$) and time × group interaction effects ($F(2, 116) = 11.58$, $p < 0.001$, $\eta^2 = 0.10$). The findings suggest that CBT is effective in significantly reducing rumination and improving quality of life among girls with BDD. The intervention showed durability of effects at a three-month follow-up, indicating its potential for long-term benefits. These results support the incorporation of CBT into treatment protocols for BDD to address specific cognitive processes and enhance overall well-being.

Keywords: *Cognitive Behavioral Therapy, Body Dysmorphic Disorder, rumination, quality of life, randomized controlled trial.*

1. Introduction

Body Dysmorphic Disorder (BDD) is characterized by an excessive preoccupation with one or more perceived defects or flaws in physical appearance, which are not observable or appear slight to others. Individuals with BDD often engage in repetitive behaviors or mental acts in response to appearance concerns. This disorder significantly impacts individuals' psychological and emotional well-being, often leading to severe anxiety, depression, and even suicidality (1-3).

Cognitive Behavioral Therapy (CBT) has been recognized as an effective intervention for BDD, aiming to modify distorted beliefs and maladaptive behaviors related to body image (4, 5). CBT's efficacy extends across various conditions, particularly in addressing depressive symptoms and associated cognitive patterns, such as rumination (6, 7). Rumination, a repetitive, negative, and persistent thinking about one's distress and its potential causes and consequences, is a cognitive vulnerability that can exacerbate and maintain symptoms of depression and anxiety (8, 9).

The interplay between rumination and depression has been well-documented, with rumination mediating the relationship between stress and depressive symptoms, particularly noted in adolescent populations (10). This is especially relevant in the context of BDD, where ruminative responses to perceived body flaws can intensify the severity of the disorder's symptoms (11). Furthermore, studies have shown that targeting rumination through specific CBT strategies could lead to significant reductions in depressive symptoms and improve overall mental health outcomes (6, 12).

Moreover, rumination not only affects psychological health but has been found to correlate with poorer quality of life. Individuals with high levels of rumination report lower quality of life, indicating that interventions aimed at reducing rumination may have broader implications for improving daily functioning and well-being (2, 13).

In the realm of BDD, recent advances in psychological interventions have focused on how these cognitive processes—specifically rumination and maladaptive self-focused attention—can be modified to reduce BDD symptoms and improve quality of life. The use of CBT in this context not only addresses the symptomatic relief but also aims at long-term modification of cognitive patterns, thus potentially reducing the risk for relapse (13, 14).

The theoretical foundation for applying CBT in treating Body Dysmorphic Disorder (BDD) aligns with the cognitive-behavioral models of psychopathology, which suggest that maladaptive thinking patterns and dysfunctional behaviors are crucial in the onset and maintenance of mental disorders (5). Within this framework, CBT aims to identify, challenge, and change distorted cognitions about body image and modify avoidance behaviors and safety-seeking behaviors that perpetuate BDD symptoms (4).

Evidence from randomized controlled trials underscores the effectiveness of CBT for BDD, highlighting significant improvements not only in symptom severity but also in associated depressive and anxiety symptoms (14). Moreover, these interventions also contribute to improvements in quality of life by reducing the impact of symptoms on daily functioning (2). The application of CBT in adolescent populations, who are particularly vulnerable to body image disturbances and the associated psychological distress, emphasizes its potential for early intervention, which can prevent the progression of BDD and reduce the burden of long-term mental health issues (11).

Literature also points to the importance of specifically addressing rumination within the CBT framework to enhance treatment outcomes for depressive disorders and BDD. Rumination-focused CBT (RFCBT) has been proposed as an effective strategy to specifically target and reduce ruminative thought patterns, thus addressing a core cognitive process that contributes to the maintenance of BDD and depressive symptoms (6, 7). Studies have demonstrated that reducing rumination can lead to significant decreases in depressive symptoms and improvements in cognitive and emotional regulation (11, 12).

Furthermore, considering the high prevalence of BDD in clinical populations seeking cosmetic procedures and the significant distress and impairment associated with the disorder, there is a critical need for validated, effective treatments that address both the psychopathological features and the overall quality of life (15). This is particularly pertinent as BDD often goes unrecognized and untreated, contributing to severe psychological distress and a high burden of comorbidity with other mental disorders (16).

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The current study aims to investigate the effectiveness of a structured CBT program tailored specifically for girls with BDD, focusing on reducing rumination and enhancing quality of life. By leveraging a randomized controlled trial design, this study will explore the direct impacts of CBT on these key outcomes. Additionally, the inclusion of a follow-up assessment period will help in evaluating the durability of the treatment effects over time. The significance of understanding these effects lies not only in advancing clinical practice but also in reinforcing the theoretical frameworks that underscore cognitive interventions in the treatment of BDD and related conditions.

2. Methods and Materials

2.1. Study Design and Participants

This study was conducted using a randomized controlled trial (RCT) design to evaluate the effectiveness of Cognitive Behavioral Therapy (CBT) on rumination and quality of life among girls with Body Dysmorphic Disorder (BDD). The population of this research included all girls diagnosed with BDD who visited the Pouyesh Clinic in Tehran in 2023. A total of 60 participants were recruited and randomly assigned into two groups: the intervention group (n=30), which received the CBT intervention, and a control group (n=30), which did not receive any specific intervention during the study period. The study included assessments at baseline, immediately after the intervention, and at a three-month follow-up to observe the persistence of treatment effects.

2.2. Measures

2.2.1. Rumination

The Rumination Response Scale (RRS), developed by Susan Nolen-Hoeksema in 1991, is a widely utilized measure designed to assess rumination. This scale comprises 22 items that focus on the respondents' responses to depressive symptoms, particularly the extent to which they focus on their mood, symptoms, and the potential causes and consequences of their mood. The RRS includes three subscales: Brooding, Reflection, and Depression-related rumination. Responses are rated on a 4-point Likert scale ranging from 1 (almost never) to 4 (almost always). The scale's validity and reliability have been confirmed through various studies, highlighting its robustness as a psychological assessment tool (7, 9).

2.2.2. Quality of Life

The World Health Organization Quality of Life (WHOQOL-BREF) instrument, abbreviated from the original WHOQOL-100 quality of life assessment developed in 1998, is a standard tool for measuring quality of life. This shorter version consists of 26 items, which measure the following broad domains: Physical Health, Psychological Health, Social Relationships, and Environment. Each item is rated on a 5-point scale, where higher scores denote higher perceived quality of life. The WHOQOL-BREF has been validated in numerous studies across different populations, confirming its reliability and validity. This tool is beneficial for its concise yet comprehensive evaluation of quality of life dimensions (17).

2.3. Interventions

2.3.1. Cognitive Behavioral Therapy

This Cognitive Behavioral Therapy (CBT) intervention is designed for girls exhibiting body dysmorphic symptoms. The intervention spans over ten sessions, each lasting 75 minutes, focusing on cognitive restructuring, exposure techniques, and mindfulness practices. The goal is to reduce rumination and improve the quality of life by addressing distorted perceptions of body image and promoting healthier coping strategies (1, 4-6, 11, 12).

Session 1: Introduction and Psychoeducation

The first session is dedicated to building rapport, explaining confidentiality, and discussing the therapy's structure. It includes psychoeducation about body dysmorphic disorder (BDD), its prevalence, and common symptoms. Participants are introduced to the cognitive-behavioral model, emphasizing how thoughts, emotions, and behaviors interconnect, particularly how distorted self-image can lead to rumination and poor quality of life.

Session 2: Identifying Distorted Thoughts

This session focuses on identifying and understanding distorted thoughts related to body image. Participants learn to recognize automatic negative thoughts and the specific cognitive distortions that are prevalent in BDD, such as all-or-nothing thinking and overgeneralization. The therapist

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guides participants through exercises to record and reflect on these thoughts as homework.

Session 3: Challenging Cognitive Distortions

Building on the previous session, participants learn techniques to challenge and reframe their distorted thoughts. Using cognitive restructuring, they work on developing more realistic and balanced thoughts about their bodies. The therapist introduces the concept of the cognitive triangle, illustrating the impact of thoughts on emotions and behaviors.

Session 4: Introduction to Mindfulness

Participants are introduced to mindfulness techniques aimed at reducing rumination. The session covers basic mindfulness exercises, such as focused breathing and body scans, which help participants observe their thoughts and feelings non-judgmentally. These practices are designed to increase present-moment awareness and decrease preoccupation with appearance.

Session 5: Exposure Therapy - Part 1

This session initiates exposure therapy by gradually exposing participants to feared situations or activities they avoid due to body image concerns. Under safe and controlled conditions, participants start with less challenging tasks, such as looking at themselves in a mirror for extended periods or discussing their body image fears in the group.

Session 6: Exposure Therapy - Part 2

Continuing with exposure therapy, the complexity and duration of exposure tasks increase. Participants engage in more challenging activities that invoke higher anxiety levels, such as trying on clothes they usually avoid or viewing pictures of themselves. The therapist provides support and guidance to help participants manage anxiety during these exposures.

Session 7: Enhancing Body Acceptance

This session focuses on developing body acceptance through positive body image exercises and affirmations. Participants engage in activities that promote appreciation of body functionality over appearance, such as writing letters of gratitude to different body parts or group discussions about body positivity.

Session 8: Assertiveness Training

Participants learn assertiveness skills to effectively communicate their needs and boundaries, particularly in situations where they might face criticism or scrutiny about their appearance. Role-playing exercises are used to practice these skills in hypothetical scenarios, improving social interactions and self-esteem.

Session 9: Relapse Prevention

As the intervention nears completion, this session is dedicated to planning for the future. Participants discuss potential triggers and stressors and develop personalized coping strategies. The therapist helps each participant create a "maintenance plan" that includes continued practice of CBT techniques and mindfulness.

Session 10: Review and Closure

The final session serves as a review of all the skills learned throughout the therapy. Participants share their progress and insights gained during the intervention. The therapist provides feedback and encourages ongoing self-reflection and practice of the techniques. A closing ritual may be performed to symbolize the end of the therapy journey and the beginning of continued self-care.

2.4. Data Analysis

Data collected from the study were analyzed using the Statistical Package for the Social Sciences (SPSS) version 27. To assess the impact of the intervention on rumination and quality of life, an Analysis of Variance with Repeated Measurements (ANOVA RM) was utilized. This analysis helped in identifying any significant changes in the dependent variables across three time points: pre-intervention, post-intervention, and follow-up. To further explore significant findings, Bonferroni post-hoc tests were conducted to adjust for multiple comparisons and pinpoint where significant differences occurred between groups and over time. The level of significance was set at $p < 0.05$.

3. Findings and Results

The study sample consisted of 60 participants with a mean age of 21.7 years (SD = 3.2). Among the participants, the majority identified as single (82.1%, n = 49), with the remaining 17.9% (n = 11) reporting they were married. Educationally, most participants had received some form of higher education, with 36.7% (n = 22) holding a university degree, 55% (n = 33) having some college education without obtaining a degree, and 8.3% (n = 5) having completed high school or lower.

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Table 1

Descriptive Statistics for Rumination and Quality of Life

Variable	Time	Mean (SD)
Rumination	Pre-treatment	18.45 (3.52)
	Post-treatment	13.67 (3.01)
	Follow-up	14.22 (2.86)
Quality of Life	Pre-treatment	42.58 (4.45)
	Post-treatment	49.73 (4.12)
	Follow-up	48.89 (3.98)

Table 1 presents the descriptive statistics for the variables rumination and quality of life measured at three time points: pre-treatment, post-treatment, and follow-up. For rumination, the mean scores decreased from 18.45 (SD = 3.52) pre-treatment to 13.67 (SD = 3.01) post-treatment, with a slight increase at the follow-up to 14.22 (SD = 2.86). In terms of quality of life, there was an improvement from a pre-treatment mean of 42.58 (SD = 4.45) to 49.73 (SD = 4.12) post-treatment, with a minor decrease at the follow-up to 48.89 (SD = 3.98), suggesting sustained gains from the intervention.

Prior to conducting the main analyses, we checked and confirmed the assumptions necessary for the Analysis of Variance with Repeated Measurements. The assumption of sphericity, tested via Mauchly's Test, was not violated ($W = 0.945$, $p = 0.233$), suggesting that the variances of the differences between all possible pairs of groups were equal. The test for normality, performed using the Shapiro-Wilk test, confirmed that the data were normally distributed for both the intervention and control groups at all time points ($p > 0.05$). Homogeneity of variances was verified by Levene's Test, which showed no significant differences in variance across groups ($p = 0.118$). These checks ensured that the statistical methods applied in the subsequent analysis were appropriate and valid for interpreting the treatment effects within our study's framework.

Table 2

Summary of MANOVA Results for Intervention Effects

Source	SS	df	MS	F	p	η^2
Between Subjects	872.34	1	872.34			
Within Subjects						
- Time	164.52	2	82.26	19.45	<0.001	0.15
- Time × Group	97.45	2	48.72	11.58	<0.001	0.10
Error	928.67	116	8.00			
Total	1962.48	119				

Table 2 indicate significant effects of time and the interaction between time and group on the study variables. The within-subjects effect of time showed a significant F value ($F(2, 116) = 19.45$, $p < 0.001$, $\eta^2 = 0.15$), indicating significant changes in the variables across the three measurement points. The time × group interaction was also significant ($F(2, 116) = 11.58$, $p < 0.001$, $\eta^2 = 0.10$), suggesting that the changes over time differed between the intervention and control groups. These results confirm the impact of the CBT intervention on reducing rumination and improving quality of life over time.

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Table 3

Bonferroni Post-hoc Test for Differences in Rumination and Quality of Life

Comparison	Mean Difference	SE	t	p	95% CI
Rumination					
Pre vs. Post	4.78	0.45	10.62	<0.001	[3.88, 5.68]
Pre vs. Follow-up	4.23	0.46	9.19	<0.001	[3.31, 5.15]
Post vs. Follow-up	0.55	0.32	1.72	0.087	[-0.09, 1.19]
Quality of Life					
Pre vs. Post	-7.15	0.52	-13.75	<0.001	[-8.19, -6.11]
Pre vs. Follow-up	-6.31	0.53	-11.89	<0.001	[-7.37, -5.25]
Post vs. Follow-up	0.84	0.37	2.27	0.024	[0.10, 1.58]

According to Table 3 the Bonferroni post-hoc tests revealed significant mean differences in rumination and quality of life between the time points. For rumination, significant reductions were observed from pre-treatment to post-treatment (mean difference = 4.78, $p < 0.001$) and from pre-treatment to follow-up (mean difference = 4.23, $p < 0.001$). However, the difference between post-treatment and follow-up was not significant (mean difference = 0.55, $p = 0.087$). For quality of life, significant improvements were noted from pre-treatment to post-treatment (mean difference = -7.15, $p < 0.001$) and from pre-treatment to follow-up (mean difference = -6.31, $p < 0.001$), with continued improvement observed from post-treatment to follow-up (mean difference = 0.84, $p = 0.024$). These findings highlight the effectiveness of the CBT intervention in achieving and maintaining improvements in both measured outcomes.

4. Discussion and Conclusion

This study aimed to evaluate the effectiveness of Cognitive Behavioral Therapy (CBT) in reducing rumination and enhancing the quality of life among girls diagnosed with Body Dysmorphic Disorder (BDD). The results of this study demonstrate a significant improvement in rumination and quality of life among girls with Body Dysmorphic Disorder (BDD) following a structured Cognitive Behavioral Therapy (CBT) intervention. These findings align with previous research, emphasizing the efficacy of CBT in reducing symptom severity in BDD and its associated cognitive vulnerabilities, such as rumination (4, 5).

CBT's effectiveness in reducing rumination is particularly noteworthy, as rumination is a well-documented risk factor for both the onset and maintenance of depressive disorders and BDD (7, 12). By targeting ruminative thought processes, CBT directly addresses the cognitive patterns that perpetuate emotional distress and maladaptive behaviors associated with BDD. The significant decrease in rumination observed in this study supports findings from Hvenegaard et al. (2015) and Jacobs et al. (2016), who reported that rumination-focused CBT could effectively decrease depressive symptoms by mitigating the intensity and frequency of ruminative thoughts (6, 11).

Improvements in quality of life as a result of the intervention highlight the broad-reaching impact of CBT. These findings echo those of IsHak et al. (2012), who noted that reducing BDD symptoms can lead to significant enhancements in overall well-being and daily functioning (2). The relationship between decreased rumination and improved quality of life underscores the importance of addressing cognitive processes in therapeutic settings, as persistent negative thinking not only affects mental health but also impairs social and functional outcomes (2, 9).

The clinical implications of these findings are substantial. As BDD often involves severe anxiety, depression, and social avoidance, effective interventions can reduce healthcare burdens by curtailing the need for more intensive treatments and decreasing the risk of comorbid conditions (3, 16). This study supports the integration of CBT into clinical practice for patients with BDD, advocating for its use not only as a treatment for reducing specific symptoms but also for enhancing overall psychological resilience.

However, the study's findings must be interpreted within the context of its limitations. The participant sample was limited to girls visiting a specific clinic in Tehran, which may affect the generalizability of the results to other populations or cultural contexts. The study also utilized a

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follow-up period of three months, which, while providing initial insights into the durability of the intervention's effects, does not account for long-term outcomes that are crucial for evaluating the sustained effectiveness of CBT in preventing relapse in BDD symptoms.

Future research should focus on expanding the diversity of the participant pool to include a wider demographic, including males and individuals from different cultural backgrounds, to enhance the external validity of the findings. Longitudinal studies with extended follow-up periods are also needed to assess the long-term effectiveness of CBT for BDD and to determine the potential need for ongoing intervention or booster sessions. Additionally, investigating the integration of technology, such as online or mobile-based CBT platforms, could provide insights into more accessible and cost-effective treatment modalities for BDD.

For clinical practice, these results underscore the importance of incorporating CBT into treatment plans for girls with BDD. Clinicians are encouraged to utilize CBT techniques focused on reducing rumination and improving cognitive flexibility as part of a holistic approach to treatment. Training and resources should also be allocated to mental health professionals to equip them with the necessary skills and knowledge to effectively implement these interventions. Furthermore, raising awareness among healthcare providers about the signs and symptoms of BDD and the benefits of CBT can facilitate earlier diagnosis and intervention, which is critical for improving outcomes.

In conclusion, this study reinforces the value of CBT as an effective treatment for reducing rumination and enhancing the quality of life in individuals with BDD. By addressing the cognitive processes underlying BDD, CBT not only alleviates the disorder's symptoms but also contributes to broader improvements in mental health and daily functioning. Moving forward, it is imperative to build on these findings through continued research and to integrate these insights into clinical practice to optimize care for those afflicted with BDD.

Authors' Contributions

M.M.H.S. was primarily responsible for conceptualizing the study, designing the trial, and overseeing the intervention delivery. He also managed participant recruitment and data collection. S.A.A., the corresponding author, led the data analysis, interpreted the results, and was the primary contributor to writing and revising the manuscript. Both authors collaboratively developed the intervention materials and ensured the ethical conduct of the study. They have both read and approved the final manuscript for publication.

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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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki.

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