

Determining the Effectiveness of Group Schema Therapy on Emotional Distress and Intolerance of Uncertainty in Patients with Binge Eating Disorder Seeking Sleeve or Gastric Bypass Surgery

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Abstract:

Background and Objective: Binge eating disorder (BED) presents a significant health challenge, adversely affecting individuals' quality of life. The present study aims to evaluate the effectiveness of group schema therapy in alleviating emotional distress and intolerance of uncertainty among patients with BED who are considering sleeve gastrectomy or gastric bypass surgery.

Materials & Methods: This research utilized a semi-experimental design, incorporating pre-test and post-test assessments alongside a control group. The participant population comprised patients diagnosed with BED who sought surgical intervention at medical centers in Tehran Province in 2023. Assessment was conducted using the Eating Disorder Questionnaire developed by Stice et al. (2001). A total of 30 individuals volunteered for the study, with 15 participants randomly allocated to the experimental group and 15 to the control group. The experimental group received a group schema therapy protocol adapted from the treatment methodology for eating disorders by Simpson and Smith (2020). Conversely, the control group did not receive any intervention. Data collection involved administering questionnaires measuring intolerance of uncertainty and emotional distress, followed by analyses using univariate analysis of covariance in SPSS version 26.

Results: The analysis revealed a significant effect size, demonstrating that group schema therapy resulted in a 69% reduction in emotional distress and a 64% decrease in intolerance of uncertainty among participants ($p < 0.001$). These findings support the efficacy of group schema therapy in reducing emotional distress and intolerance of uncertainty in patients with BED who are seeking surgical treatment.

Conclusion: Group schema therapy exhibits considerable potential as an effective intervention for reducing emotional distress and intolerance of uncertainty in patients with BED. The findings suggest that implementing group schema therapy can enhance self-esteem and improve social relationships among patients, thereby contributing positively to their overall well-being.

Keywords: *Binge-Eating Disorder; Gastric Bypass; Schema Therapy;*

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Background and Objective

In recent decades, Binge Eating Disorder (BED) has emerged as a substantial public health and psychiatric concern, imposing considerable burdens on affected individuals.¹ BED is associated with numerous physical and mental health consequences, disrupts normal eating patterns, and significantly diminishes quality of life.² According to the World Health Organization, in 2020, over 1.99 billion adults worldwide were classified as overweight, with approximately one-third of this population considered obese.^{3,4} Projections indicate that by 2040, the prevalence of overweight individuals will at least double, and obesity rates will at least triple, with a notably greater impact on women than on men.^{5,6}

Research indicates that more than 30% of individuals with obesity, as well as those attempting to lose weight, may experience symptoms associated with BED.⁷ The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) characterizes BED by recurrent episodes of excessive eating accompanied by inappropriate compensatory behaviors aimed at preventing weight gain. Epidemiologically, BED affects approximately 1% of the general population.^{2,8,9} Frequently, individuals striving to manage their weight resort to surgical interventions,¹⁰ which are increasingly regarded as viable strategies within weight management protocols.² Although these surgical procedures can yield positive outcomes, they present significant technical challenges and may lead to various complications.¹¹ Recent studies suggest that anatomical changes following surgeries such as gastric bypass and sleeve gastrectomy can influence patients' eating behaviors. For instance, reductions in stomach volume and alterations in gastrointestinal hormones can modify perceptions of hunger and satiety. However, without addressing the psychological components associated with BED, these physiological changes may prove insufficient. This gap is significant because disordered eating behaviors may persist post-surgery, underscoring that surgical intervention alone cannot resolve

the underlying psychological issues. This presents additional complications, particularly for individuals seeking sleeve or gastric bypass surgery.²

Moreover, uncertainty is an inherent aspect of daily life that can elicit varying levels of stress among individuals.^{12,13} Intolerance of uncertainty refers to the difficulty in managing unpleasant emotional responses that arise from inadequate information, rooted in one's perception of uncertainty.¹⁴ Individuals with a high intolerance of uncertainty often perceive it as a negative trigger, viewing it as threatening or something to be avoided.^{15,16} This intolerance can transform ambiguity into a source of stress, frustration, and anxiety.¹⁷ A study conducted in Iran demonstrated that schema therapy can effectively reduce worry and intolerance to uncertainty, with benefits that persist over time.¹⁸

Additionally, metacognition includes negative assessments of worry and an anxious preoccupation with the act of worrying itself. This may involve tendencies to catastrophize worries, which complicates effective mental control.^{19,20} Such metacognitive processes exacerbate and perpetuate worry, contributing to the development of pathological worry patterns.^{20,21} They convert normative worry into abnormal worry through negative beliefs and evaluations, thus significantly impacting mental health.²² The emotional toll of worry, often characterized by anxiety linked to the anticipation of catastrophic outcomes, inhibits emotional processing and sustains persistent feelings of anxiety and arousal.²³ Individuals may perceive their need to worry as a coping mechanism, preventing them from actively disrupting the cycle of worry.²⁴ Given that maladaptive schemas underlie many metacognitive patterns,²⁵ schema therapy may be an effective therapeutic approach for addressing these challenges.^{26,27}

Maladaptive schemas have been identified as significant contributors to BED, which adversely impacts the psychological well-being of individuals affected.²⁸ Group schema therapy has emerged as an effective intervention for

addressing the psychological challenges faced by individuals with obesity.²⁹ Developed by Jeffrey Young in 1999, schema therapy is an innovative therapeutic approach that integrates traditional cognitive-behavioral techniques with a focus on deep cognitive structures, or schemas.³⁰ This therapy aims to identify and modify maladaptive schemas through cognitive, emotional, behavioral, and interpersonal strategies, ultimately fostering greater psychological awareness and control. The primary objective is to repair dysfunctional schemas and enhance coping mechanisms.³¹

Research has validated the efficacy of schema therapy in treating eating disorders among overweight adolescents,³² specifically highlighting improvements in body mass index within this population.³³ Furthermore, schema therapy has been shown to effectively reduce anxiety¹⁸ and intolerance^{27,34} to uncertainty across various demographics.^{18,35} Consequently, this study aims to evaluate the effectiveness of group schema therapy in alleviating anxiety and intolerance to uncertainty in patients with BED who are candidates for sleeve gastrectomy or gastric bypass surgery.

Materials and Methods

This study employs an applied, quasi-experimental design with both test and control groups, utilizing a pre-test/post-test methodology. The sample comprises patients diagnosed with BED who were referred for sleeve or gastric bypass surgery at medical centers in Tehran Province between 2022 and 2023. Using the Eating Disorder Questionnaire developed by Stice et al.,³⁶ individuals with the highest scores on the BED scales were identified and invited to participate voluntarily. Initially, thirty participants were randomly allocated to either the experimental group or the control group (15 participants each) through a simple lottery process. During the study, three participants from the experimental group withdrew due to personal circumstances (relocation and family issues). To maintain statistical equivalence and adhere to the assumptions of parametric tests,^{37,38} three participants from the control group were

also randomly excluded using a random number table. Consequently, data analysis was conducted with a final sample of 24 participants (12 in each group). Inclusion criteria were voluntary consent, a confirmed diagnosis of BED, candidacy for sleeve or gastric bypass surgery verified by medical records, absence of other psychiatric disorders, a minimum age of 25 years, and possession of at least a high school diploma.

The exclusion criteria included a lack of cooperation in responding to questionnaire items, absence from more than two sessions, diagnosis of any additional disorders during the study period, or participation in alternative therapeutic interventions.

Ethical approval for this research was obtained from the Islamic Azad University of Qom (ethical code: IR.IAU.QOM.REC.1402.173). Participants who agreed to participate in the study received informed consent forms, along with demographic questionnaires and the Eating Disorder Questionnaire for screening purposes. Participants were thoroughly informed about the objectives of the study, their role, and the confidentiality of their data, and were required to provide consent for participation. Following the screening process, participants identified with BED were allocated into their respective groups. Both groups underwent pre-testing utilizing questionnaires designed to measure anxiety and intolerance of uncertainty. The experimental group engaged in a structured intervention program that consisted of two individual sessions lasting 45 minutes each, followed by 25 group sessions of 90 minutes each, conducted three times per week over a three-month period. In contrast, the control group did not receive any intervention during this time. After the three-month period, both groups were reassessed utilizing the same questionnaires measuring anxiety, intolerance of uncertainty, and the Eating Disorder Questionnaire. The study adhered to the ethical and professional guidelines established by the Psychology Association. All participants were informed that participation and withdrawal were entirely voluntary. They were assured that the findings of the study would be published as aggregated results and that they retained

the right to abstain from or withdraw from the study at any time. Data collection for this study involved several questionnaires, as outlined below:

Demographic Questionnaire: This instrument collected personal information, including age, marital status, educational level, and duration of illness, along with an informed consent form.

Eating Disorder Diagnostic Scale (EDDS), developed by Stice et al. in 2004,³⁶ comprises three subscales designed to diagnose various eating disorders at both clinical and subclinical levels: (1) BED, (2) Eating Disorder Not Otherwise Specified, and (3) Symptoms of Anorexia Nervosa. The scale includes questions assessing loss of control, binge eating behaviors, and avoidance of social situations. It also includes inquiries regarding the average number of binge episodes per week and compensatory behaviors (e.g., self-induced vomiting, laxative use), with frequency indicators reflecting occurrences within the past three months. Additional elements measuring weight, height, missed menstrual periods, and contraceptive use. Scoring is conducted using a Likert scale from 0 to 7 for questions 1-4, binary options for question 5, and a combination of yes/no/don't know responses for questions 6 and 9-14. A higher total score indicates a more negative body image perception. The original developers reported a Cronbach's alpha coefficient of 0.91 for the scale. Convergent validity with the Eating Core Beliefs Questionnaire (ECBQ) was established at 0.89.³⁶ In Wagner's study, reliability coefficients were 0.87 for normal-weight samples and 0.83 for overweight samples.³⁷ In Iran, a reliability coefficient of 0.82 was recorded, supported by clinical interview validity for anorexia nervosa, bulimia nervosa, and BED, yielding validity values of 0.89, 0.85, and 0.83, respectively.³⁸

Intolerance of Uncertainty Scale (IUS) is a 27-item questionnaire developed by Sexton and Dugas in 2009. It comprises two components:³⁹ (1) Self-Referential Implications (Uncertainty Unfair), which includes items 1, 2, 3, 9, 12, 13, 14, 15, 16, 17, 20, 22, 23, 24, and 25; and (2) Unfair Uncertainty (Exploratory Factor Analysis),

which includes items 4, 5, 6, 7, 8, 10, 11, 18, 19, 21, 26, and 27. Responses are rated on a 5-point Likert scale ranging from "never" (1) to "always" (5). Total scores are calculated by summing the item responses, with possible scores ranging from 27 to 135; higher scores indicate greater difficulty in managing uncertainty. The developers reported Cronbach's alpha of 0.92 for the Self-Referential Implications subscale, 0.91 for the Unfair Uncertainty subscale, and 0.95 for the overall scale. Factor analyses, including the KMO test and Bartlett's test confirmed an adequate sample size, with a KMO value of 0.97. Confirmatory factor analysis demonstrated a comparative fit index of 0.97 and a root mean square error of approximation of 0.07, thus supporting the scale's validity.³⁹ In Iran, reliability coefficients were reported as 0.91 for the pre-test, 0.90 for the post-test, and 0.93 for follow-up assessments.⁴⁰ For diagnostic and convergent validity, the scale exhibited correlations of $r = 0.55$ with the Beck Anxiety Scale (1988) and $r = 0.62$ with the Beck Depression Scale (1961).⁴¹

Meta Worry Questionnaire (MWQ), developed by Wells in 2005, isolates items related to meta-worry from the anxiety thought questionnaire. Its purpose is twofold: to independently assess meta-worry and to evaluate its frequency. This questionnaire consists of seven items addressing the risks associated with worrying. Respondents select from four options that reflect how frequently each item pertains to them, employing a four-point Likert scale ranging from "almost never" (1) to "almost always" (4). Scores range from a minimum of 7 to a maximum of 28, with higher values indicating stronger beliefs in meta-worry. The MWQ effectively distinguishes between outpatients diagnosed with generalized anxiety disorder and those experiencing somatic anxiety or no anxiety, achieving a Cronbach's alpha of 0.88.⁴² In Iran, the instrument demonstrated a test-retest reliability coefficient of 0.79 over two months, in addition to a Cronbach's alpha of 0.80.⁴³ Furthermore, a study by Mirkuhi et al. reported a reliability coefficient of 0.74 (Table 1).⁴⁴

Table 1- Schema therapy session protocol

Session	Title	Content
Individual Sessions		
1	Interview and Assessment	Provide demographic information, schema assessment, intolerance of uncertainty scale, metacognitive anxiety evaluation, and informed consent forms
2	Case Conceptualization	Provide results and interpret questionnaires and the educational brochure. Explain the group process, its purpose, and the rules. Develop a case conceptualization based on developmental history, personal history, and coordination/relationship patterns.
Group Meetings		
1	Establishing security and group bonding	Using group wristbands (Farrell and Shaw) promotes healthy growth, bonding, and the survival of the group. Additionally, using several scarves serves as a tangible symbol of their connection and sense of belonging.
2	Psychological training on early maladaptive schemas, coping mindsets and their connection to eating disorders	Creating a continuous link between past and present experiences; using a photograph from infancy or childhood to facilitate communication with a vulnerable child; identifying the goals of group therapy and the group's core coping mindsets; and relating bulimic behaviors to these mindsets and associated emotions.
3	Schema model training	Identifying met and unmet needs: Using playing cards and brick wall exercises to discover unmet needs; explaining intergenerational schemas and connecting childhood needs to early maladaptive schemas through the figure.
4	Group exercises on identifying, mapping and role-playing mindsets	Drawing or painting the primary mindsets of the group, role-playing them, and guessing these mindsets; conducting the bus exercise; demonstrating bulimic behaviors along with the key messages and corresponding facial expressions related to each mindset, while having the rest of the group guess them.
Session	Title	Content
5	Healthy Adult Mindset Introduction Exercises and Genealogy Exercises	Identify the differences between healthy and coping adult mindsets among participants working in pairs. Use white and red paper to represent mindsets with external and internal signs, respectively. Assign homework to identify any parental or coping mindsets or schemas from previous generations.
6	Blocking Coping Mindsets Exercise	Addressing the body safely without becoming overwhelmed by emotions by focusing on the mind and movement.
7	Mask Exercise	Farrell and Shaw Group Exercise – A connection and disconnection activity designed to raise awareness of the impact of indifferent protection on oneself and others, as well as the individual's ability to meet their emotional needs.

8	<i>Showing Mindset and Focusing on Pros and Cons</i>	<i>Focus on the mindsets that are important to participants and the behaviors associated with them. Develop empathy for the vulnerable child mindset. Practice maintaining a vulnerable perspective as a healthy, kind adult when confronted by the inner critic or an overcontrolling voice.</i>
9	<i>Small Imagery with Eating Disorder Triggers, Chair Work on Coping Mindsets</i>	<i>Conduct a 10-step exercise to identify coping mindsets and relate them to participants' eating behaviors. Build trust in these coping mindsets to better address participants' needs. Role-play a step designed to prevent maladaptive coping mindsets. Modify the exercise by incorporating the "devil's advocate" chair technique.</i>
10	<i>Chair Work - Therapist Plays the Role of the Vulnerable Child</i>	<i>Through a 10-step practice, change perspectives toward coping mindsets and reassure the vulnerable child to trust a healthy adult. Assign homework that allows the vulnerable child to express their emotional needs.</i>
11	<i>Empathic Exposure, Historical Role-Playing</i>	<i>Implementing Farrell and Shaw's (2013) six-step formula for empathic coping behaviors within the group involves challenging schemas through three types of role-playing. This approach helps depersonalize parental behaviors that have been influenced by the problems and stresses in their lives.</i>
12	<i>Mindset to Strengthen Healthy Adult, Recognizing Emotional Needs, Practice of Coordination/Discoordination</i>	<i>Mental visualization exercises for healthy adult growth and empowerment while working from home include connecting with one's creative self through activities such as dance, tai chi, yoga, pottery, painting, or writing. These exercises also involve accessing the mindset of a vulnerable child and fostering an understanding of the need for coordination and empathy throughout the four stages of working from home.</i>
13	<i>Small Awareness Exercises, Open Parenting Imagery</i>	<i>Body-focused awareness practice for 20 seconds at a time (Focused Exercise by Gendlin, 1978) in six steps.</i>
14	<i>Group Drawing, Facing the Inner Critic</i>	<i>Reducing the power of the inner critic when confronted with both realistic and irrational situations—focusing on common triggers such as weighing yourself, looking in the mirror, breaking a diet, and similar experiences.</i>
15	<i>Group Imagery Rewriting, Mental Imagery to Combat the Inner Critic</i>	<i>Begin by establishing a safe and comforting environment, then revisit a distressing childhood memory related to body image, nutrition, or weight issues. Rewrite this memory, concluding with positive messages directed at the vulnerable child's mind. This process strengthens mental imagery through analogy, functioning as a form of psychological physiotherapy.</i>
Session	Title	Content
16	<i>Limiting the inner critic, working with the chair - fighting with the inner critic</i>	<i>Working in pairs to challenge the inner critic and affirm individuals through 14 steps.</i>
17	<i>Change: working with the chair when the inner critic sabotages the progress of treatment</i>	<i>Reviewing situations in which the inner critic has attempted to sabotage efforts or instill a sense of failure, and reflecting on the origins and development of the inner critic's power over time.</i>

18	<i>Behavior pattern-breaking</i>	<i>Inviting participants to select specific behavioral goals involves changing behavior by creating a comprehensive list of all relevant rules and setting corresponding goals to strengthen the healthy adult self.</i>
19	<i>Strengthening the healthy adult with happy child exercises</i>	<i>Imagery, therapist self-disclosure, learning visualization, and breathing exercises are integral components of the three stages of the healthy adult model (Van der Weingart, 2015). These short activities emphasize fun to enhance spontaneity and pleasure through visualization and body movement, helping individuals move beyond confrontational mindsets.</i>
20	<i>Removing body image disturbances and practicing the inner critic focused on the body, internal dialogue between the person and the body</i>	<i>In five steps, we replace the negative messages from the inner critic with healthy affirmations using chair work. In thirteen steps, participants confront the shameful messages attacking their bodies and express kindness toward each other's bodies.</i>
21	<i>Body imagery practice and experiential focus</i>	<i>Participants, like scientists from Mars, provide a scientific description of the human body, focusing on features that the inner critic perceives as defects, while remaining careful to avoid judgment.</i>
22	<i>Working with the chair on mentalities that sabotage the treatment process</i>	<i>Identifying mindsets that prevent participants from progressing and achieving happiness in the future—collaborating with the chair to emphasize that nothing is more important than health and happiness.</i>
23	<i>Relapse prevention and behavioral stability</i>	<i>Arranging a program of activities based on a healthy adult's responses to mindsets and using a worksheet to revisit previously effective strategies—teaching mindset management and intelligent responses within the schema framework.</i>
24	<i>Future-oriented visual rewriting</i>	<i>Focus on preparing for typical triggering situations and interrupting automatic coping mindset responses to encourage new behavioral strategies. Encourage the healthy adult mindset to engage in a firm and calm dialogue with the vulnerable child's mindset and needs.</i>
25	<i>Conclusion and summary</i>	<i>Overview of exercises and worksheets designed to develop concrete plans for moving forward after the group work concludes.</i>

The schema therapy protocol employed in this research is based on the therapeutic framework developed by Susan Simpson and First Smith in their publication, *Schema Therapy for Eating Disorders*. A summary of the protocol is presented in Table 1. This adaptable protocol encompasses all aspects of the schema therapy approach, which includes interpersonal, experiential, cognitive, and behavioral components. It consists of two individual sessions, each lasting 45 minutes and primarily focused on assessment, followed by 25 group sessions, each lasting 90 minutes. A principal objective of this group guide is to assist participants identify and integrate various elements of their mindset into a cohesive self, thereby fostering healthier psychological functioning.⁴⁵

Demographic information, including age, gender, and education was collected from both the experimental and control groups, and the mean values and standard deviations were calculated. A univariate analysis of covariance (ANCOVA) was conducted to evaluate each variable, ensuring that the assumptions of normality, outlier analysis, homogeneity of regression slopes, and equality of variances (assessed using Levene's test) were met. Data analysis was performed using SPSS version 26, with the significance level set at 0.05.

Findings

A total of 24 participants participated in this study, evenly divided into control and experimental groups, each comprising 12 participants. After accounting for participant dropouts, homogeneity testing using independent *t*-tests and chi-square tests revealed no significant differences between the two groups in demographic variables or pre-test scores ($P > 0.05$). Demographic data indicated that in the control group, five participants (41.7%) were married, while seven (58.3%) were

single. In contrast, the experimental group included seven married participants (58.3%) and five single participants (41.7%). The ages of participants in the experimental group ranged from 30 to 57 years (mean $\pm$ SD: 43.5 $\pm$ 5.35), whereas the control group's ages ranged from 32 to 51 years (mean $\pm$ SD: 40.25 $\pm$ 6.73). The average duration of bulimia nervosa was 3.7 $\pm$ 8.5 months in the experimental group and 2.35 $\pm$ 8.75 months in the control group. Table 2 presents the descriptive statistics for the study variables by group.

The results presented in table 2 reveal that the mean scores for meta-worry and intolerance of uncertainty significantly decreased in the experimental group from pre-test to post-test, while no significant changes were observed in the control group. The Shapiro-Wilk test confirmed that the scores for both meta-worry and intolerance of uncertainty were normally distributed during the pre-test and post-test phases ($P > 0.05$), thereby fulfilling the normality assumption. Levene's test indicated that the assumption of equal variances for the dependent variables was met, and an *F* test assessing interaction effects confirmed that the assumption of homogeneity of regression slopes was satisfied.

Given that all assumptions required for ANCOVA were met, a one-way ANCOVA was conducted to evaluate the efficacy of group schema therapy on meta-worry and intolerance of uncertainty. A summary of the results is presented in table 3.

Table 3 illustrates that the significance level of the differences between the groups is less than 0.05, indicating that group schema therapy has a significant influence on reducing both meta-worry and intolerance of uncertainty in patients with BED. Specifically, the partial eta squared values denote that group schema therapy accounted for a 69.1% enhancement in meta-worry and a 64.8% improvement in intolerance of uncertainty in this patient population.

Table 2- Mean and standard deviation of research variables at different times by group, along with the test of the assumption of normality of data distribution and homogeneity of variances and homogeneity of the slopes of regression lines

Variable	Groups	Test	Control	Shapiro-Wilk Normality Test		Lon Test		Slope of Regression Lines	
		Mean±Standard Deviation	Mean±Standard Deviation	Statistics	Probability value	Statistics	Probability value	Statistics	Probability value
Anxiety	Pre-test	18/00±3/97	17/33±2/70	0/968	0/626				
	Post-test	13/00±3/77	11/50±2/74	0/969	0/636	0/36	0/85	2/52	0/265
Intolerance of uncertainty	Pre-test	79/83±18/76	78/00±14/21	0/979	0/874	0/51	0/82	2/398	0/464

Table 3- Results of the analysis of covariance test for the effectiveness of group schema therapy on improving meta-worry and intolerance of uncertainty

Variable	Source of variation	Sum of squares	df	Mean of squares	F	Probability value	Eta squared
Anxiety	Intergroup	151/414	1	151/414			
	Error	67/832	21	3/230	46/876	<0/001	0/691
Intolerance of uncertainty	Intergroup	254/921	1	254/921	12/865	<0/001	0/648

Discussion and Conclusion

This study examined the impact of group schema therapy on meta-worry and intolerance of uncertainty in patients diagnosed with BED. The results illustrated a significant difference between the experimental and control groups in the assessed scores. Univariate analysis of covariance confirmed substantial disparities in meta-worry and intolerance of uncertainty between the two groups,

corroborating findings from similar studies conducted by Nadai et al.,³⁵ Pak Andish et al.,³² Joshua et al.,⁴⁶ and Peters et al.⁴⁷

The data suggest that group schema therapy effectively alleviated meta-worry in the experimental group, as evidenced by the comparison of mean scores before and after the intervention. This finding highlights the utility of this therapeutic approach for patients experiencing persistent and excessive worry, a common feature of

anxiety characterized by a pronounced focus on prospective problems and irrational fears. Such psychological states often lead to increased stress levels, reduced quality of life, and exacerbation of psychological disorders. Schema therapy is a contemporary, integrated treatment modality that builds upon traditional cognitive-behavioral approaches by incorporating concepts from various psychological paradigms, including cognitive-behavioral therapy, attachment theory, object relations, gestalt therapy, constructivism, and psychoanalysis.⁴⁸ Research has recognized it as an effective intervention for BED.²⁹ For instance, one study reported significant improvements in emotional regulation and body mass index among obese women undergoing this therapy.^{29,32}

The current study further demonstrates that instruction in stress management techniques and cognitive restructuring can mitigate extreme and persistent concerns in patients. Reducing meta-worry has the potential to enhance mental health and foster feelings of tranquility and security. Group schema therapy facilitates this reduction by identifying and modifying dysfunctional schemas, promoting adaptive strategies, confronting inner criticism, and addressing maladaptive coping mechanisms. Empirical research consistently demonstrates that schema therapy effectively alleviates worry¹⁸ and meta-worry, with these beneficial outcomes often sustained over time.^{27,34}

Furthermore, the findings of this study indicate a significant improvement in intolerance of uncertainty among patients who participated in group schema therapy. This suggests that schema therapy enhances tolerance for ambiguity, equips patients with essential coping skills, and strengthens their social support systems, thereby facilitating their ability to manage uncertain situations with reduced anxiety. Given that intolerance of uncertainty presents a considerable challenge for patients diagnosed with BED, enhancing this capability can foster a greater sense of control and diminish anxiety levels. Group schema therapy creates an environment in which patients are encouraged to recognize and accept the emotions and experiences

associated with uncertainty, thereby improving their tolerance for ambiguity. By emphasizing mental health and reinforcing coping strategies, this therapeutic approach demonstrates effectiveness in managing BED and has the potential to enhance self-esteem and social relationships. Existing literature, including a study conducted in Iran, supports the effectiveness of schema therapy in reducing worry and intolerance of uncertainty, demonstrating sustained positive effects.¹⁸ Additionally, research by Nadai and colleagues has established the efficacy of schema therapy in alleviating intolerance of uncertainty, which, alongside the reduction of clinical symptoms, can enhance the overall quality of life for patients.³⁵ Consequently, the integration of group schema therapy into treatment and support programs for individuals with BED is strongly recommended.

This study undoubtedly has limitations, including the potential influence of extraneous and confounding variables such as social, familial, and economic factors, as well as dysfunctional schemas that may affect the reported outcomes. Since this research was conducted within treatment centers, caution is necessary when generalizing the findings to individuals outside this specific context. Additionally, a notable limitation is the absence of gender differentiation in the analysis. Future research should examine the effectiveness of group schema therapy separately for male and female participants. It is also advisable to sample individuals diagnosed with BED who are not candidates for surgical intervention, selected from diverse social and environmental backgrounds, while considering their socioeconomic conditions. Establishing a follow-up program for patients is essential. Upon concluding the group schema therapy sessions, the formation of support groups is recommended to facilitate ongoing experience exchange and mutual support, thereby aiding in the maintenance of treatment benefits and reducing the risk of relapse. Investigating the therapy's impact on other life domains—including occupational functioning, social relationships, and overall quality of life—would provide a more comprehensive understanding of its effects. Additionally,

family workshops addressing issues related to BED may prove beneficial. In light of the positive outcomes observed in this study, it is recommended that schema therapy be integrated as a primary therapeutic method within treatment programs for BED. Further research examining the long-term effects of schema therapy, as well as its application to other psychological disorders, is also encouraged. This study contributes valuable scientific evidence to the existing literature regarding schema therapy and its effects on psychological variables, ultimately aiming to enhance the quality of life for patients diagnosed with BED. Considering the favorable findings from group schema therapy across various domains, it stands as a reliable and efficacious method for the management of BED. Continuous monitoring and

professional oversight are critical to achieving optimal therapeutic outcomes. This research affirms that group schema therapy serves as a robust and comprehensive approach for reducing meta-worry and enhancing tolerance to uncertainty among patients with BED.

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