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Effectiveness of Schema Therapy on Coping Styles and Quality of Life in Overweight Individuals with Binge Eating Disorder

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A B S T R A C T

The aim of this study was to evaluate the effectiveness of schema therapy on coping styles and quality of life in overweight individuals with binge eating disorder. The research method was a semi-experimental design, with a pre-test-post-test structure and a control group. The statistical population consisted of all women with binge eating disorder who visited nutrition and weight control clinics in District 1 of Tehran. The sampling method was cluster sampling, where two clinics were selected from the nutrition and weight control clinics in District 1, and 50 individuals were chosen from each clinic. A binge eating questionnaire was distributed among 100 individuals. Based on the results of the test, 15 individuals with the highest binge eating scores were randomly assigned to the experimental group, and 15 individuals to the control group. The data collection tools in this study were the Binge Eating Questionnaire by Gormally, Black, Daston, and Rardin (1982), the Coping Styles Questionnaire by Endler and Parker (1990), and the Quality of Life Questionnaire by the World Health Organization (1993). Schema therapy was conducted in 20 sessions, each lasting 45 minutes. The data were analyzed using covariance analysis. The results showed that schema therapy had an impact on coping styles and quality of life in overweight individuals with binge eating disorder. These findings suggest that by changing and correcting maladaptive early schemas, individuals can adopt healthier and more effective coping styles instead of using ineffective ones, resulting in an improvement in their quality of life.

Keywords: *schema therapy, coping styles, quality of life, overweight individuals, binge eating disorder*

1. Introduction

The shift in lifestyle and eating habits towards the excessive consumption of high-fat and energy-dense foods, along with reduced physical activity, has led to the increasing prevalence of obesity and overweight (1). Obesity is a chronic disorder involving a complex interaction of environmental, cultural, psychosocial, metabolic, and genetic factors. The World Health Organization (WHO) considers obesity a global problem and estimates that by 2025, it will be one of the most common health disorders worldwide (2). In Iran, 5.5% of children and adolescents under 18 years old and 21.5% of individuals over 18 years old are obese (3). Obesity is one of the major problems in

developing societies, often associated with eating disorders. These disorders are characterized by behaviors related to eating, leading to changes in food intake and absorption, which significantly harm the individual's health and functioning (4-6). Although binge eating disorder is not limited to obese individuals, it is a common diagnostic disorder in this group. Binge eating disorder involves recurrent episodes of binge eating that occur at least once a week, without regular use of compensatory behaviors for weight control, lasting for three consecutive months (7). In diagnosing binge eating disorder, three criteria are present, in addition to a sense of helplessness: eating much faster than usual, eating large amounts of food when not physically hungry, and eating alone due to embarrassment over the quantity of food consumed, self-loathing, depression, or intense guilt after binge eating (8).

Research has shown that schemas and their associated mindsets influence behavior through the creation of coping styles. In schema therapy, three coping styles—surrender, avoidance, and overcompensation—are introduced. In the surrender style, individuals submit to their schemas and never attempt to fight or distance themselves from them, but rather accept the schema as true (9). When individuals use the avoidance style, they attempt to behave in a way that prevents the activation of the schema. In the overcompensatory coping style, individuals struggle with their schema through thoughts, feelings, behaviors, and interpersonal relationships, as though they have an opposing schema (10). Various studies have shown that eating styles used to cope with psychological stress are one of the most important predictors of eating disorders, as individuals choose coping styles to reduce psychological stress. Choosing maladaptive coping strategies, rather than resolving conflicts, can lead to eating disorders. Among inefficient coping styles, emotional avoidance is often used by obese individuals when faced with their problems. When the impulsive child mindset and vulnerable child mindset in obese individuals are activated in response to challenges, emotional-avoidant coping is employed (11). Considering the high prevalence of binge eating disorder in obese individuals and the emphasis on physical aspects and treatments for this disorder, attention to psychological treatments, considering the mental struggles they face, is essential. Various studies have shown that treating binge eating disorder is a difficult process, and only a small portion of individuals seeking treatment respond to cognitive-behavioral therapy (CBT). Approximately half of individuals with eating disorders show a response to CBT at 60-week follow-up (9). Given the use of cognitive-behavioral therapies in treating binge eating disorder and the conflicting results regarding their effectiveness, the need for deeper therapies, such as schema therapy, becomes apparent. Schema therapy, developed by Young, is an integrative treatment primarily based on expanding traditional cognitive-behavioral concepts and methods (12). One of the strengths of the integrated model is its consideration of pathology in the deep layers of personality and cognition through schemas. Due to the high prevalence of comorbidities and complex personality traits in individuals with eating disorders, schema therapy is recognized as a potentially suitable treatment option. The schemas targeted for treatment are persistent and self-destructive patterns that usually begin in early life. These patterns consist of ineffective negative thoughts and emotions that are repeatedly reinforced, creating barriers to achieving personal goals and meeting needs. These schemas are behaviorally maintained through coping styles of avoidance, surrender, and overcompensation. The schema therapy model is designed to help individuals eliminate negative patterns of thinking, feeling, and behavior while developing healthier alternatives. It has been used individually and in group formats for a range of clinical disorders, including borderline personality disorder, chronic depression, and eating disorders (13).

Although the main focus of obesity research has been on physical consequences, obesity also has various negative effects on an individual's cognitive capacity for leading an active and fulfilling life. It is increasingly recognized that the issues related to obesity are not limited to physical and medical conditions but also significantly affect functional capacity and quality of life. In recent years, the concept of quality of life has been introduced as an important indicator for evaluating health, making decisions, and assessing individual judgments about the public health of a community, as well as identifying major issues in various aspects of individuals' lives in mental health research (14).

Despite challenges in defining quality of life, experts generally agree on a wide range of concepts. Some scholars

Health Nexus
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agree on the mindset and dynamics of this concept, while most believe that quality of life is a multidimensional concept encompassing both positive and negative aspects of life (15). On the other hand, some consider it an individual concept, meaning it should be determined by the individual based on their own perspective, rather than by others. In a comprehensive definition of quality of life, the WHO defines it as an individual's perception of their current situation, considering the culture and value system they live in, and how these perceptions align with their goals, expectations, standards, and life priorities. Quality of life is heavily influenced by time and place, and its components and factors will vary depending on the time period and geographic location. This concept allows individuals to pursue valuable goals in their lives, which is reflected in their overall sense of well-being (16). Research evidence has shown the relationship between weight gain and poor quality of life, emphasizing that obesity can disrupt various aspects of life. This relationship is stronger in women than in men, with obese women reporting lower quality of life and more physical and psychological problems. Conversely, some studies suggest that women experience more anxiety about their body image and fitness than men. Misperceptions of body image and dissatisfaction with it can be associated with numerous physical and mental issues, leading to a reduced quality of life. Furthermore, it has been demonstrated that schema therapy can have positive effects on quality of life. Recently, in line with efforts by health professionals, one effective approach for preventing and treating obesity, as well as reducing its multiple psychological and health consequences, has been to integrate psychological treatments with other medical and physical therapies. In this context, Young's schema therapy model (1999) has been highlighted. This model addresses the deepest cognitive levels, targeting maladaptive early schemas, and helps individuals overcome these schemas using cognitive, emotional, behavioral, and interpersonal strategies, which is a key concept in this approach (17). The primary goal of schema therapy is to create psychological awareness and increase conscious control over schemas, with the ultimate aim of improving schemas and coping styles (18).

Given the aforementioned points, it is clear that schema therapy, due to its impact on disorders stemming from psychological backgrounds, has proven effective for certain conditions. However, no research has yet been conducted on how schema therapy may influence the quality of life and coping styles of overweight women with binge eating disorder. This raises the question: Does schema therapy affect the quality of life and coping styles in obese individuals with binge eating disorder?

2. Methods and Materials

2.1. Study Design and Participants

Given the objective of the study, the present research was a quasi-experimental design with a pre-test and post-test, including a control group. The results, if obtained, could be applied practically. Data collection was done using questionnaires, making this study a field research in terms of data collection methods. In terms of research methodology, this study is categorized as a quantitative research because it analyzed the relationships between variables based on data collected from questionnaires.

The statistical population of this study consisted of all women suffering from binge eating disorder who visited nutrition and weight control clinics in District 1 of Tehran. The sampling method was cluster sampling, in which two nutrition and weight control clinics in District 1 of Tehran were first selected, and from each clinic, 50 individuals were chosen. The binge eating questionnaire was distributed among 100 of these patients. Based on the results, 15 individuals with the highest binge eating scores were randomly assigned to the experimental group, and 15 others to the control group.

First, after coordination with the officials of the nutrition and weight control clinics in District 1 of Tehran, and providing explanations to the officials and women with binge eating disorder about how the study would be conducted, the binge eating questionnaire was distributed among the individuals. Those who scored higher than 16 on the binge eating disorder scale were selected as the sample. Among these, 15 individuals were randomly assigned to the experimental group and 15 to the control group. In the pre-test, the Coping Styles Questionnaire by Endler and Parker (1990) and the World Health Organization Quality of Life Questionnaire (1993) were distributed among all participants. Then, 20 sessions of 45 minutes each of schema therapy were conducted with the experimental group. After

Health Nexus
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completing the sessions, the same questionnaires were administered again in the post-test. Finally, the data were analyzed. During this period, the control group did not receive any intervention.

Data collection was conducted using library methods. To form the control and experimental groups, the results from the nutritional centers and weight loss clinics (for final control, the binge eating index scores of the samples were measured again) were used to categorize the samples. Then, for each group, data were gathered using the coping styles and quality of life questionnaires.

This study was conducted on obese women with binge eating disorder. For this purpose, individuals who scored higher than 16 on the Gormally Scale and had confirmation from the centers for nutritional and weight control regarding their binge eating disorder were selected and entered into the study. These individuals were then assigned to the experimental group, while those with lower scores were placed in the control group. The content of schema therapy interventions was then delivered, and the intervention group attended several sessions of this therapy. It is important to note that written, informed consent was obtained from all participants.

2.2. Measures

2.2.1. Binge Eating

The Binge Eating Scale was developed by Gormally, Black, Daston, and Rardin (1982) to measure the severity of binge eating in obese individuals. This scale includes 16 items, each with three or four statements. Respondents are asked to select the statement that best describes them. Items are scored on a scale from zero to three, with the total score ranging from zero to 46. A score higher than 16 indicates the presence of binge eating disorder, and higher scores indicate more severe binge eating. The English, Portuguese, and Italian versions of this scale have demonstrated adequate validity, sensitivity, and specificity (19). Dehkam, Moludi, Metabi, and Omidar (2009) examined the psychometric properties of the Iranian version of the Binge Eating Scale and reported a validity of 0.67 using the split-half method and 0.73 using the test-retest method (19). The Cronbach's alpha coefficient for this scale was reported as 0.91.

2.2.2. Coping Styles

This questionnaire, developed by Endler and Parker (1990), assesses three coping styles: task-oriented, emotion-oriented, and avoidance-oriented. The predominant coping style of each individual is determined based on their scores in each of the three dimensions. In other words, the behaviors that score higher on the scale are considered the individual's preferred coping style. The questions throughout the questionnaire are designed to control for any side effects. After reading each question, respondents are asked to indicate a 5-point scale (1 = never, 5 = always) to indicate how frequently they use the coping style described. This scale is used for both healthy and ill adults and adolescents, as well as for various occupational groups. The scoring is consistent across age groups. The reliability of this test, based on Cronbach's alpha, was reported by Endler and Parker (1990) for task-oriented coping as 0.90 for girls and 0.92 for boys, for emotion-oriented coping as 0.85 for girls and 0.82 for boys, and for avoidance-oriented coping as 0.82 for girls and 0.85 for boys. Jafarinejad (2003) reported reliability coefficients of 0.80, 0.83, and 0.72 for emotional, task-oriented, and avoidance coping styles, respectively (20). In the current study, Cronbach's alpha coefficients for the task-oriented, emotion-oriented, and avoidance coping styles were 0.79, 0.78, and 0.70, respectively.

2.2.3. Quality of Life

The World Health Organization's Quality of Life Scale includes 26 items that assess health, mental well-being, social relationships, and the environment. Its differential validity, content validity, and test-retest reliability have been well established (World Health Organization, 1993). The WHO Quality of Life questionnaire was translated from the original language to Persian by five experts in health psychology and then back-translated to ensure accuracy. No discrepancies were found between the translations. Additionally, the questionnaire was used in a study with 504 teachers to examine its factor structure (Farahani et al., 2009), which identified four components: life necessities, physical health, interpersonal relationships, and meaning in life. In the present study, the Cronbach's alpha for the life necessities, meaning of life, physical health, and

Health Nexus
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interpersonal relationships subscales were reported as 0.75, 0.70, 0.80, and 0.82, respectively.

2.3. Intervention

2.3.1. Schema Therapy

The following intervention protocol is designed for individuals with binge eating disorder, utilizing schema therapy techniques over a course of 20 sessions. The primary aim is to address maladaptive schemas and cognitive distortions contributing to the disorder while helping individuals develop healthier coping strategies. Each session builds upon the previous one to ensure gradual progress, with an emphasis on emotional, cognitive, and behavioral interventions. The therapy sessions focus on fostering self-awareness, emotional regulation, and changing the deep-rooted patterns that sustain the individual's binge eating behaviors (21).

Session 1: Establishing Rapport and Understanding the Problem

In the first session, the therapist focuses on building a trusting therapeutic relationship with the client. The individual is encouraged to share their experiences with binge eating, exploring how the disorder developed and persisted. The therapist helps the client understand the nature of their problem and begin to identify the emotional and psychological factors that may have contributed to the onset of binge eating. Establishing a collaborative relationship is emphasized to facilitate open communication and successful therapy outcomes.

Session 2: Education about the Disorder and Cognitive Model

This session involves psychoeducation on binge eating disorder, its characteristics, and the underlying cognitive and emotional patterns. The therapist explains the cognitive model, outlining how distorted thoughts and beliefs influence the individual’s behavior. Additionally, the therapist and client clarify their expectations from therapy and set achievable goals. The session emphasizes the importance of understanding the relationship between thoughts, emotions, and behavior, and how changes in one domain can positively impact others.

Session 3: Identifying Precipitants and Core Beliefs

The focus of this session is to identify triggers and underlying core beliefs that contribute to binge eating behaviors. The therapist helps the client explore specific situations, emotional states, or thoughts that lead to overeating. The session also aims to identify avoidant behaviors and basic beliefs that maintain the disorder, such as feelings of unworthiness or a lack of control. This provides a foundation for addressing maladaptive patterns in later sessions.

Session 4: Recognizing Cognitive Distortions

During this session, the therapist works with the client to evaluate their cognitive processes, identifying distorted thoughts that contribute to binge eating. The session highlights common cognitive distortions such as all-or-nothing thinking, catastrophizing, or overgeneralization. The client is taught how these cognitive errors perpetuate unhealthy behaviors and is introduced to techniques for recognizing and challenging these distortions in real-time.

Session 5: Confronting Avoidance and Cognitive Restructuring

In this session, the therapist encourages the client to confront avoidant behaviors, which may include emotional suppression, denial, or avoidance of distressing thoughts and feelings. The therapist teaches cognitive restructuring techniques to help the client reframe distorted thoughts and beliefs. The goal is to reduce avoidance by addressing underlying fears and promoting healthier coping mechanisms, enabling the client to confront difficult emotions without resorting to binge eating.

Session 6: Modifying Ineffective Cognitive Patterns

This session focuses on changing and correcting cognitive distortions. The therapist works with the client to practice more adaptive thinking patterns and provide alternative, balanced perspectives. The therapist emphasizes how these new thought patterns can lead to healthier emotional responses and behaviors. The client is encouraged to develop new, more constructive ways of thinking that challenge their previous maladaptive cognitive patterns.

Session 7: Introducing Schema Therapy Framework

In this session, the therapist introduces the schema therapy model, explaining its core concepts, such as schemas, modes, and coping styles. The client is educated on the role of early maladaptive schemas in shaping their current behavior patterns, including binge eating. The

Health Nexus
E-ISSN: 2981-2569

therapist helps the client conceptualize their problem in terms of unmet emotional needs and early experiences that contributed to the formation of maladaptive schemas.

Sessions 8–10: Identifying Maladaptive Schemas

During these sessions, the therapist helps the client identify and understand their early maladaptive schemas. The therapist focuses on exploring different schema domains, such as disconnection and rejection, impaired limits, and other common schemas linked to binge eating. The client works to connect specific patterns of behavior with the identified schemas, helping to raise awareness of how these enduring beliefs influence their emotional regulation and eating habits.

Sessions 11–13: Modifying Maladaptive Schemas Using Emotional Techniques

In these sessions, the therapist introduces emotional techniques to help the client challenge and alter maladaptive schemas. Techniques such as imagery, imagery rescripting, and fantasy dialogue are used to process painful emotions and memories associated with the schemas. The client is encouraged to re-experience key emotional moments and develop alternative interpretations that promote healthier emotional responses.

Sessions 14–16: Modifying Schemas with Behavioral Techniques

These sessions focus on using behavioral techniques to modify maladaptive schemas. The therapist encourages the client to engage in specific behaviors that counteract the effects of their schemas, such as confronting fears related to self-worth or control. Behavioral exercises may include exposing the client to situations that trigger avoidance, promoting healthier coping strategies, and increasing adaptive behaviors such as self-care or assertiveness.

Sessions 17–20: Modifying Schemas with Cognitive Techniques

In the final phase of therapy, the therapist helps the client apply cognitive techniques to further modify their schemas. This includes critically evaluating the evidence supporting maladaptive beliefs, preparing educational cards to challenge dysfunctional thoughts, and conducting cost-benefit analyses of holding on to dysfunctional schemas. The goal is to help the client develop a more realistic and adaptive cognitive framework, allowing for lasting change in their relationship with food and emotions.

2.4. Data Analysis

Data were analyzed using SPSS 23 software after collection and coding. To test the hypotheses, covariance analysis was used.

3. Findings and Results

Before performing covariance analysis and testing the hypotheses, it is essential to examine the assumptions underlying this method to ensure the obtained results are valid and generalizable. It is also worth mentioning that in the present study, a 5-point Likert scale was used to calculate the scores for quality of life and coping styles. It is important to note that the quality of life scores were transformed to a range of 0 to 100, while the coping styles scores ranged from 16 to 80, which were derived from the sum of the scores of their respective items.

To assess the normality of the distribution of variables, the Shapiro-Wilk test was used, and the results are presented in Table 1.

Table 1

Shapiro-Wilk Test

Time	Variable	Control (Test Statistic, p-value)	Experiment (Test Statistic, p-value)
Pre-test	Task-Oriented Style	0.904, 0.110	0.949, 0.511
	Emotion-Oriented Style	0.918, 0.182	0.970, 0.859
	Avoidant Style	0.949, 0.508	0.968, 0.822
	Quality of Life	0.948, 0.495	0.976, 0.931
Post-test	Task-Oriented Style	0.916, 0.166	0.972, 0.881
	Emotion-Oriented Style	0.912, 0.146	0.974, 0.916
	Avoidant Style	0.927, 0.248	0.967, 0.813
	Quality of Life	0.966, 0.794	0.972, 0.883

Health Nexus
E-ISSN: 2981-2569

If the obtained p-value for any of the research variables is greater than 0.05, this indicates that the data for that variable follow a normal distribution. Based on the results, it can be concluded that the pre- and post-intervention scores for coping styles and quality of life in both groups follow a normal distribution ($p > 0.05$). However, in the control group, the scores for the difference in pre- and post-intervention for emotion-oriented, avoidant coping styles, and quality of life, as well as in the experimental group for task-oriented coping styles, do not follow a normal distribution ($p < 0.05$).

To examine the assumption of homogeneity of variance, Levene's test was used, and the results are presented in Table 2.

Table 2

Levene's Test for Homogeneity of Variances

Variable	F Statistic	df1	df2	P Value
Task-Oriented Style	2.383	1	28	0.134
Emotion-Oriented Style	0.723	1	28	0.402
Avoidant Style	0.102	1	28	0.752
Quality of Life	0.092	1	28	0.764

As can be seen, the assumption of equality of variances holds for all three coping styles and quality of life ($p > 0.05$).

The assumption of homogeneity of regression slopes means that the regression coefficient for the dependent variable, based on covariates, should be the same across groups. If the interaction between the experimental variable and the covariate (pre-test) is not significant, this assumption is supported. Based on the ANCOVA output, it was observed that the interaction between the experimental variable and the covariate (pre-test) was significant for all three coping styles and quality of life ($p < 0.05$). Therefore, the regression slope for the two groups (experimental and control) was not the same for any of the variables, and this assumption was not met.

Table 3

Interaction Significance Between the Experimental Variable and Covariate (Pre-Test)

Interaction Between Variable and Covariate	Sum of Squares	df	Mean Square	F Statistic	P Value
Task-Oriented Style	1608.536	2	804.268	105.535	0.000
Emotion-Oriented Style	943.857	2	471.928	37.443	0.000
Avoidant Style	1975.126	2	987.563	116.163	0.000
Quality of Life	3242.065	2	1621.033	250.673	0.000

Considering the assumptions mentioned above, it is evident that the data in this study do not meet the requirements for entering covariance analysis. Therefore, covariance analysis could not be used to examine the differences in coping styles and quality of life between the two groups at post-intervention while accounting for pre-intervention scores. As a result, in this study, after examining the differences between the two groups at pre-intervention, the Change Analysis method was used to evaluate the effectiveness of schema therapy on coping styles and quality of life in obese individuals with binge eating disorder. Additionally, a paired-sample t-test was used to compare within-group changes before and after the intervention. To examine between-group changes in the control and experimental groups, independent t-tests were used if the assumption of normality was met, otherwise, the Mann-Whitney test was applied.

Before performing covariance analysis and testing the hypotheses, it is essential to examine the assumptions underlying this method to ensure the obtained results are valid and generalizable. It is also worth mentioning that in the present study, a 5-point Likert scale was used to calculate the scores for quality of life and coping styles. It is important to note that the quality of life scores were transformed to a range of 0 to 100, while the coping styles scores ranged from 16 to 80, which were derived from the sum of the scores of their respective items.

Health Nexus
E-ISSN: 2981-2569

To compare the two groups (control and experimental) in terms of coping styles before the intervention, an independent t-test was used. To compare the mean coping styles within each group before and after the intervention, a paired-sample t-test was applied. The difference in scores before and after the intervention for coping styles between the two groups was also analyzed using the Mann-Whitney test, and the results are presented in Table 4-10. The results of this table show that according to the independent t-test, prior to the intervention, the mean score of the task-oriented style (control group: 43.87, experimental group: 39.60), emotion-oriented style (control group: 46.47, experimental group: 41.07), and avoidant style (control group: 48.80, experimental group: 53.60) were similar between the two groups ($p > 0.05$). After the intervention, no significant difference was found in the mean scores for the task-oriented style (control group: 44, experimental group: 44.60), emotion-oriented style (control group: 46.53, experimental group: 43.13), and avoidant style (control group: 51.07, experimental group: 50.27) between the two groups.

The results of the paired-sample t-test showed that in the control group, the mean score for the task-oriented style (pre: 43.87, post: 44) and emotion-oriented style (pre: 46.47, post: 46.53) did not significantly change before and after the intervention ($p > 0.05$). However, the mean score for the avoidant style increased significantly after the intervention (post: 51.07, pre: 48.80, $p = 0.045$). Additionally, in the experimental group, the mean score for the emotion-oriented style after the intervention (post: 43.13) did not differ significantly from before the intervention (pre: 41.07, $p = 0.254$). However, the mean score for the task-oriented style after the intervention (post: 44.60) was significantly higher than before the intervention (pre: 39.60, $p < 0.001$), and the mean score for the avoidant style after the intervention (post: 50.27) was significantly lower than before the intervention (pre: 53.60, $p < 0.001$). This suggests that schema therapy had a significant impact on the coping styles of obese women with binge eating disorder in Tehran, leading to an increase in the effective task-oriented style and a decrease in the maladaptive avoidant style.

To investigate the effect of schema therapy on coping styles in obese individuals with binge eating disorder, the Change Analysis method was also employed, with the results presented in Table 5. In this method, after ensuring the homogeneity of the two groups regarding the mean of each coping style before the intervention, if a significant difference was found between the pre- and post-intervention score differences in any coping style, it would indicate a significant effect of the intervention on that style. Based on the results of the Mann-Whitney test, it was observed that there was a significant difference between the pre- and post-intervention score differences for the task-oriented and avoidant coping styles in both the control and experimental groups ($p < 0.05$). Given that the mean difference for the task-oriented style in the experimental group (5.00) was greater than in the control group (0.13), and the mean difference for the avoidant style in the experimental group (-3.33) was smaller than in the control group (2.27), it can be concluded that schema therapy increased the task-oriented coping style and decreased the avoidant coping style in obese women with binge eating disorder. No significant difference was found in the pre- and post-intervention score differences for the emotion-oriented coping style between the two groups ($p = 0.254$). Therefore, it can be concluded that schema therapy has an effect on coping styles in obese individuals with binge eating disorder.

Table 4

Within-Group and Between-Group Comparison and Change Analysis of Coping Styles

Variable	Stage	Control Mean	Control SD	Experimental Mean	Experimental SD	Within-Group Test	p Value
Task-Oriented Style	Pre-Intervention	43.87	8.543	39.60	10.301	Independent t-test	0.227
	Post-Intervention	44.00	7.550	44.60	8.509	Independent t-test	0.840
	Difference	0.13	1.598	5.00	4.209	Mann-Whitney	$p < 0.001$
Within-Group p (Paired t-test)		$p = 0.751$		$p < 0.001$			
Emotion-Oriented Style	Pre-Intervention	46.47	8.667	41.07	9.083	Independent t-test	0.107

Health Nexus
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	Post-Intervention	46.53	8.034	43.13	4.580	Independent t-test	0.166
	Difference	0.07	1.486	2.07	6.734	Mann-Whitney	0.367
Within-Group p (Paired t-test)		p = 0.865		p < 0.001			
Avoidant Style	Pre-Intervention	48.80	9.182	53.60	11.740	Independent t-test	0.223
	Post-Intervention	51.07	7.146	50.27	10.299	Independent t-test	0.807
	Difference	2.27	3.990	-3.33	2.743	Mann-Whitney	
Within-Group p (Paired t-test)		p = 0.045		p < 0.001			

To compare the two groups (control and experimental) in terms of quality of life before the intervention, an independent t-test was used. To compare the mean quality of life within each group before and after the intervention, a paired-sample t-test was applied. The difference in quality of life scores before and after the intervention between the two groups was also analyzed using the Mann-Whitney test, and the results are presented in Table 6. The results of this table show that based on the independent t-test, prior to the intervention, the mean quality of life score for the control group (58.08) and the experimental group (54.36) were similar (p = 0.468). After the intervention, no significant difference was found between the mean quality of life scores of the control group (59.04) and the experimental group (60.45) (p = 0.729).

The results of the paired-sample t-test showed that in the control group, the mean quality of life score before the intervention (58.08) did not differ significantly from after the intervention (59.04) (p = 0.192). However, in the experimental group, the mean quality of life score after the intervention (60.45) significantly increased compared to before the intervention (54.36) (p < 0.001). This suggests that schema therapy had a significant impact on the quality of life of obese women with binge eating disorder in Tehran, leading to an improvement in their quality of life.

To investigate the effect of schema therapy on quality of life in obese individuals with binge eating disorder, the Change Analysis method was also employed, with the results presented in Table 5. Based on the results of the Mann-Whitney test, it was observed that there was a significant difference between the mean difference in quality of life scores between the two groups (p = 0.001). Given that the mean difference in quality of life scores in the experimental group (6.09) was larger than in the control group (0.96), it can be concluded that schema therapy improved the quality of life in obese women with binge eating disorder. Therefore, schema therapy has an effect on quality of life in obese individuals with binge eating disorder.

Table 5

Within-Group and Between-Group Comparison and Change Analysis of Quality of Life

Variable	Stage	Control Mean	Control SD	Experimental Mean	Experimental SD	Within-Group Test	p Value
Quality of Life	Pre-Intervention	58.08	14.44	54.36	13.19	Independent t-test	0.468
	Post-Intervention	59.04	12.66	60.45	9.09	Independent t-test	0.729
	Difference	0.96	2.72	6.09	4.52	Mann-Whitney	p = 0.001
Within-Group p (Paired t-test)		p = 0.192		p < 0.001			

4. Discussion and Conclusion

The results of the paired-sample t-test indicated that in the control group, the mean score of the task-oriented coping style (before: 43.87, after: 44) and the emotion-oriented coping style (before: 46.47, after: 46.53) did not show a significant difference before and after the intervention (p > 0.05). However, the mean score of the avoidant coping style after the intervention (51.07) was significantly higher than before the intervention (48.8) (p = 0.045). In the

Health Nexus
E-ISSN: 2981-2569

experimental group, the mean score of the emotion-oriented coping style after the intervention (43.13) did not show a significant difference compared to before the intervention ($p = 0.254$). However, the mean score of the task-oriented coping style after the intervention (44.6) was significantly higher than before the intervention (39.6) ($p < 0.001$), and the mean score of the avoidant coping style after the intervention (50.27) was significantly lower than before the intervention (53.6) ($p < 0.001$). This suggests that schema therapy had a significant effect on the coping styles of obese women with binge eating disorder in Tehran, leading to an increase in effective task-oriented coping and a reduction in inefficient avoidant coping. Furthermore, since the mean difference in task-oriented coping scores in the experimental group (5) was larger than in the control group (0.13), and the mean difference in avoidant coping scores in the experimental group (−3.33) was smaller than in the control group (2.27), it can be concluded that schema therapy enhanced task-oriented coping and reduced avoidant coping in obese women with binge eating disorder. No significant difference was observed in the difference of emotion-oriented coping scores between the control and experimental groups ($p = 0.254$). Therefore, schema therapy has an effect on coping styles in obese individuals with binge eating disorder.

In general, the results support the first sub-hypothesis of this study, namely that schema therapy affects coping styles in obese individuals with binge eating disorder. These results are in line with the prior studies (21-23). To explain this hypothesis, it can be stated that the nature of early maladaptive schemas directs individuals towards unhealthy behaviors and inefficient reactions. Schema therapy, with the goal of identifying and correcting these maladaptive schemas, enables individuals to change their thought and behavior patterns. These changes lead to the development of more effective and adaptive coping styles, which, in turn, help reduce binge eating behaviors and improve stress management in these individuals. In other words, schema therapy, by reconstructing maladaptive schemas, strengthens healthier coping strategies, resulting in overall improvements in the mental and physical health of obese individuals with binge eating disorder.

Additionally, the results indicated that based on the independent t-test, before the intervention, the mean quality of life score for the control group (58.08) and the experimental group (54.36) were similar ($p = 0.468$). After the intervention, no significant difference was observed between the mean quality of life scores of the control group (59.04) and the experimental group (60.45) ($p = 0.729$). The results of the paired-sample t-test showed that in the control group, the mean quality of life score before the intervention (58.08) did not differ significantly from after the intervention (59.04) ($p = 0.192$). However, in the experimental group, the mean quality of life score after the intervention (60.45) significantly increased compared to before the intervention (54.36) ($p < 0.001$). This suggests that schema therapy had a significant effect on the quality of life of obese women with binge eating disorder in Tehran, leading to an improvement in their quality of life. In general, the results support the second sub-hypothesis of this study, namely that schema therapy affects the quality of life in obese individuals with binge eating disorder. These results align with the prior studies (21, 24-27). To explain this hypothesis, it can be stated that early maladaptive schemas contribute to the creation and persistence of psychological and behavioral issues. Schema therapy, by identifying and changing these negative schemas, helps individuals correct their beliefs and thought patterns. These corrections lead to improvements in self-concept, stress reduction, and an increased sense of control over life. These changes improve social interactions, increase life satisfaction, and promote both physical and psychological health. Therefore, by reducing the negative effects of maladaptive schemas, the quality of life in obese individuals with binge eating disorder improves.

In conclusion, the results support the main hypothesis of the study, which states that schema therapy affects coping styles and quality of life in obese individuals with binge eating disorder. The results of this hypothesis align with the previous studies (6, 9-12, 17, 18, 21, 22, 28-30). In general, it can be explained that schema therapy, by emphasizing coping styles, can help individuals learn the necessary skills to better manage stress, negative emotions, and maladaptive eating patterns, thereby achieving better weight control and improving their quality of life. Schema therapy, as a valid method in treating obese individuals with binge eating disorder, influences coping styles in several ways: identifying and changing maladaptive patterns, reinforcing

Health Nexus
E-ISSN: 2981-2569

coping skills, enhancing self-awareness, improving interpersonal relationships, increasing social life quality, promoting weight loss, improving physical health, and reinforcing psychological well-being. By improving these factors, schema therapy directly and indirectly leads to a better quality of life for individuals. Furthermore, it aids in behavioral changes, such as identifying maladaptive eating patterns in response to stress or negative emotions, which can result in better self-control, improved communication, and increased self-esteem (2, 8-10, 14).

One of the limitations of this study is the relatively small sample size, which may limit the generalizability of the findings to a larger population of obese individuals with binge eating disorder. Additionally, the study relied on self-reported measures for assessing coping styles and quality of life, which may be subject to response biases. The lack of a long-term follow-up to assess the sustainability of the effects of schema therapy is another limitation, as it is unclear whether the improvements observed after the intervention are maintained over time. Furthermore, the study only included female participants from Tehran, which may limit the applicability of the results to other demographic groups or geographic regions.

Future research should consider including larger and more diverse samples to enhance the external validity of the findings, as well as exploring the long-term effects of schema therapy on coping styles and quality of life in individuals with binge eating disorder. It would also be valuable to investigate whether combining schema therapy with other therapeutic approaches, such as cognitive behavioral therapy or mindfulness-based interventions, leads to more significant improvements in coping mechanisms and overall well-being. Additionally, longitudinal studies that track participants' progress over an extended period would provide more insight into the durability of the therapy's effects. Exploring the mechanisms underlying the relationship between maladaptive schemas and binge eating behaviors could also provide valuable information for refining therapeutic interventions.

The findings of this study have important clinical implications, suggesting that schema therapy can be a valuable intervention for improving coping styles and quality of life in obese individuals with binge eating disorder. Mental health professionals working with this population may benefit from incorporating schema therapy techniques to help clients identify and modify maladaptive schemas that contribute to emotional distress and unhealthy coping behaviors. Additionally, the study highlights the importance of addressing both psychological and behavioral factors in the treatment of binge eating disorder, suggesting that a more integrated approach to therapy may improve both mental and physical health outcomes. Public health initiatives aimed at addressing obesity and eating disorders may also consider integrating schema therapy into their treatment protocols to promote better long-term outcomes for affected individuals.

Authors' Contributions

T. M. contributed to the conceptualization, design, and methodology of the study. R. Z. assisted in data collection, analysis, and interpretation of results. Z. E. contributed to the literature review, writing the manuscript, and revising the final draft. All authors were involved in reviewing and approving the final 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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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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Health Nexus
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Health Nexus
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