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Comparing the Effectiveness of Cognitive Behavioral Therapy and Acceptance and Commitment on Lifestyle Related to Obesity in Individuals with Eating Disorder

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ABSTRACT

Background: Obesity is a chronic, relapsing, and progressive disease that requires long-term, interdisciplinary treatment strategies to improve health outcomes. This study compared the effectiveness of cognitive behavioral therapy and acceptance and commitment on components of lifestyle related to obesity in overweight individuals with disordered eating behaviors.

Methods: This was a quasi-experimental study with a pretest-posttest-follow-up design and a control group. The study population included 200 overweight individuals with irregular eating behaviors who referred to two obesity treatment clinics in Tehran between January 2023 and June 2024. According to the inclusion criteria, a sample of 45 people was randomly selected and placed in three cognitive behavioral therapy, acceptance and commitment, and control groups (15 people in each group). Data were collected using Clark et al.'s obesity-related lifestyle questionnaire. The data were analyzed by the statistical method of analysis of variance with repeated measurements and Bonferroni post hoc test.

Results: The results of analysis of variance showed that the mean obesity-related lifestyle score of cognitive behavioral group decreased from pre-test (103.61±6.39) to post-test (75.07±5.65) ($p< 0.05$), and in commitment and acceptance group decreased from pre-test (103.58±5.24) to post-test (88.27±5.16) ($p< 0.05$). This was while the mean scores of the control group did not change significantly in pre-test (103.94±6.19) and post-test (102.87±6.49) ($p> 0.05$). Moreover, both cognitive behavioral therapy and commitment and acceptance interventions significantly improved obesity-related lifestyle scores in the experimental groups compared to the control group ($F=7.40$, $P=0.01$); however, no significant difference was observed between the two interventions ($p>0.05$)

Conclusion: Cognitive behavioral therapy and commitment and acceptance are effective interventions in improving lifestyles related to obesity, and therapists in this field can use these therapeutic approaches to improve patients.

Keywords: Obesity, Acceptance and Commitment Therapy, Cognitive Behavioral Therapy, Life Style

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Introduction

Obesity is now recognized as a chronic disease, and its prevalence is rapidly increasing. This condition is a risk factor for numerous diseases such as diabetes, dyslipidemia, liver disease, and cardiovascular disorders (Oh et al., 2025). Obesity is also often associated with mental health problems and psychosocial difficulties (Leung et al., 2020). Obesity is a complex, heterogeneous, chronic, and progressive disease, which substantially affects health, quality of life, and mortality (Lingvay et al.,2024). Problematic eating behaviors and temperamental traits may have a bidirectional psychopathological influence in obese patients (Gravina et al., 2025). According to recent reports, more than one in two adults and nearly one in six children are affected by overweight or obesity (Kokkorakis et al., 2025). Due to the serious physical and psychological consequences of obesity, the World Health Organization (2023) has classified it among the ten most common global health issues. Identifying the underlying causes of obesity is considered a fundamental component of any effort to curb its spread. Despite extensive research in basic and clinical sciences, uncertainty regarding the etiology of obesity remains one of the main obstacles to designing effective strategies for its control and treatment. (Khalid et al., 2025).

One variable that has been investigated in obese individuals is the lifestyle associated with obesity (Huang et al., 2024). Although the biology of human eating behavior has deep evolutionary roots, eating has deep personal and cultural meanings; this suggests that such behavior is influenced by cognitive, environmental, biological and emotional factors. Several studies have shown that self-efficacy beliefs predict health-related behaviors such as weight control, eating behavior, and exercise and smoking cessation. Cognitive Behavior Therapy (CBT) interventions have been very useful in the management of obesity by modifying eating behaviors, food choices and reducing psychological distress and physical inactivity. CBT methods, unlike other behavioral therapies, directly address feelings and thoughts. In this therapeutic approach, patients are helped to change distorted patterns and maladaptive behaviors through structured discussions and behavioral assignments (Levin et al., 2024). One of the primary goals of Cognitive-Behavioral Therapy (CBT) is to alter negative thought patterns—through positive affirmations and cognitive restructuring—in order to change an individual's mindset and, consequently, the link between negative thoughts and maladaptive behaviors (Wright, 2025). Evidence suggests that CBT can teach cognitive and behavioral strategies to achieve and maintain positive lifestyle changes (Colombo et al., 2025). Research by (Kim et al.,2020) also found that CBT has been a preferred treatment approach for weight loss for the past 20 years. Findings by (Rychescki et al., 2024) showed that CBT is effective in reducing stress and anxiety in people with obesity. Another effective psychological intervention in this area is Acceptance and Commitment Therapy (ACT) (Kasila et al., 2020).

Over the past 10–15 years, several new therapies have emerged as expanded forms of CBT in psychotherapy (Fogelkvist et al., 2020). The third wave of behavioral therapy began in the early 1990s with the development of innovative therapies that used mindfulness principles and emphasized present-moment awareness and acceptance (Hofmann & Asmundson, 2008). Third-wave therapies can be categorized into two groups: (1) interventions based on mindfulness training (e.g., mindfulness-based stress reduction and mindfulness-based cognitive therapy) and (2) interventions that incorporate mindfulness as a key component (e.g., ACT and dialectical behavior therapy) (Arch et al., 2023). These therapies emphasize changing clients' relationships with their internal experiences and avoidance patterns. In acceptance-based behavioral therapies, clinical problems are conceptualized behaviorally. Three main issues underlie mental disorders: problems with awareness, avoidance of internal experiences,

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and lack of engagement in meaningful and worthwhile life activities. These issues are targeted in interventions (Arch et al., 2023).

In this context, by Gravina et al. (2025) showed that ACT effectively reduced emotional eating and improved responsiveness to food cues in individuals with disordered eating behaviors. Pitil & Ghazali's study (2024) showed that ACT-based interventions led to improved physical activity and healthier food choices in overweight individuals. In addition, research by (Power et al., 2025) found that both CBT and ACT significantly reduced emotional eating in overweight individuals. Despite significant advances in psychological treatments for obesity, existing research has rarely compared the effectiveness of CBT and ACT in improving components of overweight and disordered eating behaviors. A major research gap in this area is the lack of comparative evidence on the effects of these two approaches on multidimensional variables such as lifestyles associated with obesity. These limitations hinder a deeper understanding of the differences and potential benefits of each treatment approach in promoting mental health and improving overweight-related behaviors. This research gap exists not only in explaining the mechanisms of each treatment approach, but also in identifying individual characteristics that may influence treatment response. Therefore, the aim of this study is to compare the effectiveness of CBT and ACT in improving obesity-related lifestyle in individuals with disordered eating behaviors.

Methods

The present study was a quasi-experimental study, and the design used in this study was pre-test-post-test with a control group and a two-month follow-up phase. Participants of this study included all (200 individuals) the overweight individuals with irregular eating behaviors who referred to two obesity treatment clinics in Tehran from January 2023 to June 2024. There are various methods for determining sample size; the method of this research is semi-experimental, and 10 people were assigned to each group (Delavare, 2016). However, due to the possibility of sample attrition and to increase the generalizability of the results, the sample size included 45 people (15 people for each group). The sample was selected according to the inclusion criteria and was randomly assigned to two experimental groups (n=15) and a control group (n=15). Primarily three groups were identified (CBT, ACT, and control groups) and participants were divided into three groups by throwing dice. In this way, numbers one and two were assigned to the CBT group, numbers three and four to the ACT group, and numbers five and six to the control group.

Inclusion criteria included consent to participate in the study, age between 25 and 45 years, having a body mass index (BMI) of 25 or higher, having at least a high school diploma, and not taking psychiatric medications. Exclusion criteria included receiving psychological treatments in the past year, taking psychotropic medications, and taking medication for at least 6 months before the initial assessment and review. According to the definition by the World Health Organization, individuals with a BMI of over 30 are classified as obese. Another criterion for sample selection was the results of diagnostic interviews conducted by clinical psychologists to identify worrying behaviors and attitudes such as binge eating, emotional eating, or unhealthy dieting. Descriptive statistics (mean, standard deviation) as well as inferential statistics (two-way variance analysis) using SPSS-26 were applied to analyze data. The significance level was also considered to be 5% in this study. Weight Efficacy Lifestyle Questionnaire (WELQ) was developed by Clark et al. (1991) to measure self-control ability among obese individuals seeking treatment; it is a 20-item instrument that measures a person's confidence in refraining from eating in various situations. The questions are answered on a 10-point Likert scale from 0 (unsure) to 9 (very confident) and include subscales of negative emotions, availability, social pressure, physical discomfort, and positive activities. Clark et al. obtained factor loadings for these 20 items at 0.83

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for availability subscale, 0.84 for negative emotions subscale, 0.79 for the physical discomfort subscale, and 0.89 for social pressure subscale. In terms of concurrent validity, the correlation of its total scores with the total scores of the Eating Self-Control Ability Scale was 0.67. In the present study, Cronbach's alpha was 0.84 for the entire questionnaire and 0.71, 0.78, 0.77, 0.85, and 0.91 for the components of negative emotions, availability, social pressure, physical discomfort, and positive activities, respectively.

Therapy sessions

All members of the training and control groups completed a pre-test questionnaire before implementing the training methods. Therapy sessions were held for the experimental groups. Upon completion of the therapy sessions, questionnaires were distributed to and completed by members of both the experimental and control groups. Additionally, a two-month follow-up assessment was conducted for all groups. The interventions were administered by a psychologist. It is worth noting that the control group did not receive any intervention during this period; however, following the conclusion of the therapy sessions—and in adherence to professional ethical standards—the ACT intervention was subsequently provided to the control group as well.

Participants in the first experimental group attended eight 90-minute sessions of Cognitive Behavioral Therapy (CBT) based on the protocol developed (Moraes et al. ,2021) (Table1).

Table 1. Summary of group CBT sessions

Session No.	Session Content
1	Establishing contact with the group members, briefly introducing the type of treatment and the goals of the treatment protocol, explaining the informed consent to participate in the research and how to cooperate, obtaining consent from the participants, and filling out pre-test questionnaires.
2	Addressing barriers to weight loss and factors related to the patient's concerns, using standard behavioral activation techniques, redesigning negative automatic thoughts, and providing a record sheet for recording ineffective thoughts.
3	Reviewing the records of ineffective thoughts of obese patients, challenging automatic thoughts using the Socratic method, and conducting behavioral training for controlling cravings and overeating.
4	Teaching the role of keywords, affirmations, support systems, and how to use them in weight loss, re-identifying underlying beliefs and the way they are activated in specific situations, using the downward arrow technique, and examining several of the individuals' target issues.
5	Developing awareness of underlying beliefs, strengthening positive self-talk, and using behavioral techniques to replace positive thoughts with negative thoughts.
6	Introducing tempting foods and their calorie content and teaching how to deal with them, using CBT techniques on assertiveness, the role of obesity and overweight in reducing assertiveness, and teaching problem solving and social skills.
7	The nature of types of immediate and ultimate pleasure focused on food, further identifying of unconditional beliefs and core beliefs, modifying old and ineffective beliefs with new beliefs, and preparing to apply the learned methods in future life situations.
8	Summarizing treatment and preventing relapse at the end of the session, the dependency contract (a behavioral therapy method whereby agreements are made between group members in order to exchange rewards for expressing desirable behaviors).

Participants in the second experimental group underwent eight weekly 90-minute sessions of Acceptance and Commitment Therapy (ACT) based on the protocol developed by(Iturbe et al.,2021). Relevant details are presented in (Table 2).

The summary of ACT sessions is as follows (Table 2).

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Table 2. Summary of ACT sessions

Session No.	Session Content
1	Discussion about the limits of confidentiality, therapeutic relationship, expression of the course of treatment and conclusion of a therapeutic contract, and implementation of pre-test questionnaires.
2	Teaching self-control through assignments, teaching the concept of creative helplessness, the well metaphor, teaching the hungry tiger metaphor, and eating mindfully and consciously.
3	Introducing control as a topic, teaching about the inner and outer world, and teaching about behavioral commitment.
4	Continuing control as a topic, metaphor two for creating structure, guest metaphor, and referring to the feeling of clean and unclean.
5	Creating fault, teaching the metaphor of numbers and buses, examining unpleasant thoughts as reality, and behavioral commitments.
6	Self as context (talking about me and the observer me), examining values, examining the form of describing values, and practicing values.
7	Continuing to talk about self as context by telling the chess metaphor, practicing chocolate cake, practicing mental polarity and practicing jumping, and examining values.
8	Assessing commitment to action, the bubble and seedling metaphor, teaching content practice on cards, assessing commitment to action, and gathering sessions.

Results

The data were analyzed using SPSS version 26 software which included variance test with repeated measures and Bonferroni post hoc test. The mean age of the participants in the CBT group was 33.20 ± 5.24 years, in the ACT group, 35.33 ± 5.58 years, and in the control group, 34.00 ± 5.28 years. Independent samples t- test indicated no significant differences between groups in age . Furthermore, the results of the Chi square test examining the internal consistency of the qualitative data revealed that the experimental and control groups were not significantly different in their demographics, e.g. gender, and duration of illness between the experimental and control groups ($p > 0.05$). Thus, it can be concluded that the demographic characteristics are similar in experimental and control groups.

Table 3 shows the amount of p value and demographic characteristics of the participants (age, gender, and duration of illness) by group (Table 3).

Table 3. Analyzing demographic information using the Chi-square test and t- test

Variable		CBT Frequency (percent)	ACT Frequency (percent)	Ccontrol Frequency (percent)	P
Age	25-35	9(60)	7(46.72)	5(33.33)	0.377
	36-45	6(40)	8(53.35)	10(66.73)	
Gender	Female	5(33.33)	7(46.72)	4(26.75)	0.467
	Male	10(66.73)	8(53.35)	11(73.33)	
Duration of illness	Less than ten years	6(40)	7(46.72)	9(60)	0.249
	More than ten	9(60)	8(53.35)	6(40)	

Table 4 presents the mean and standard deviation of obesity-related lifestyle scores of overweight individuals in the experimental and control groups according to the research design. The results of the Shapiro-Wilk test showed that the obesity-related lifestyle scores of overweight individuals in the experimental and control groups follow from normal distribution ($P > 0.05$).

Also, the homogeneity of variances was examined with Levine test. The test values for obesity-related lifestyle ($F = 0.763$, $p = 0.502$) were not significant at the 0.05 level. This

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indicates that the variance of patients' scores in the experimental and control groups for the main variable was equal. Therefore, it can be argued that the data are normally distributed. Thus, the assumption of using the MANOVA test in the research data was confirmed (Table 4).

Table 4. Descriptive statistics, Shapiro-Wilk test of obesity-related lifestyle scores on measurement stage P

Shapiro-Wilk		P	Mean (Std. Deviation)	Measurement stage	Groups
Sig	Statistics W				
0.458	0.881	0.856	103.61 (6.39)	Pre-test	CBT
0.285	0.898	0.596	75.07 (5.65)	Post-test	
0.562	0.884	0.847	77.40 (4.85)	follow-up	
0.742	0.880	0.767	103.58 (5.24)	Pre-test	ACT
0.098	0.872	0.327	88.27 (5.16)	Post-test	
0.0342	0.898	0.483	89.39 (5.40)	follow-up	
0.654	0.866	0.946	103.94 (6.19)	Pre-test	Control
0.248	0.866	0.415	102.87 (6.49)	Post-test	
0.621	0.859	0.232	103.53 (5.28)	follow-up	

In Table 5, examines the difference in mean scores obesity-related lifestyle between the control and experimental groups during the treatment stages. The results show that there is a significant multivariate effect on obesity-related lifestyle scores between CBT and ACT and control groups (regardless of time periods) (Pillai's Trace = 0.575, F= 7.403, $p < .001$, $\eta p^2 = 0.288$). Moreover, there is a significant multivariate effect between time periods within subjects regardless of groups (Pillai's Trace = 0.781, F= 11.573, $p < .001$, $\eta p^2 = 0.392$), and there is also a significant multivariate effect in the interaction between group and time periods (Pillai's Trace = 0.801, F= 12.250, $p < .001$, $\eta p2 = 0.401$). These findings indicate that the effectiveness of CBT and ACT on obesity-related lifestyle scores changes over time (measurement periods); these changes are significantly different according to the results, and the obesity-related lifestyle scores in both intervention groups decreased significantly and continued until the follow-up stage. In contrast, no such change was observed in the control group ($P>0.05$). Therefore, both CBT and ACT are effective in improving obesity-related lifestyles in participants. Bonferroni's post-test showed that the difference in pre-test scores with all subsequent stages in both experimental groups was significant, but the difference between the two groups was not significant in the post-treatment and follow-up stages (Table5).

Table 5. Results of repeated measures MANOVA (multivariate analysis of variance)

Factor	Pillai' V	F	df	Error df	P	ηp^2
Group	0.575	7.403	6	110	0.001	0.288
Time	0.781	11.573	6	110	0.001	0.392
Group× time	0.801	12.250	6	110	0.001	0.401

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In Table 6, the results of the Bonferroni post hoc test were calculated to examine the difference between the means in the three groups at the time stages (pretest-posttest-follow-up) . As the findings in Table 6 show, the CBT and ACT groups did not differ significantly in obesity-related lifestyle at post-test and follow-up, but were significantly better than the control group (Table 6).

Table 6. Results of the Bonferroni post hoc test for pairwise comparison of means of obesity-related lifestyle scores in the three groups

Dependent variable	Groups	Mean difference	Standard error	Significance level
Obesity-related lifestyle	CBT - ACT	-0.07	1.66	0.54
	CBT-control	-2.46	1.66	0.01
	ACT- control	-2.52	1.66	0.03

Discussion

This study aimed to compare the effectiveness of CBT and ACT on obesity-related lifestyle in overweight individuals with disordered eating behaviors. The results indicated that both methods are effective. This outcome is consistent with the results of (Lecerf et al., 2025) who reported that an online CBT program incorporating mindful eating significantly reduced weight, waist circumference, and emotional eating in obese patients.

Similarly, the results of this study align with the work of (Wright, 2025; Schumacher et al.,2025; Keivani et al., 2021) which confirmed that CBT effectively modifies maladaptive eating behaviors and cognitive distortions related to weight and body image. The meta-analysis indicated that CBT appeared to significantly decrease anxiety, depressive symptoms, uncontrolled eating, and emotional eating immediately after the intervention (Gao et al., 2025).

From an analytical perspective, the effectiveness of CBT in this study can be attributed to several mechanisms. First, CBT directly targets dysfunctional automatic thoughts and core beliefs about eating, weight, and body shape. By using techniques such as Socratic questioning, thought records, and behavioral experiments, participants in the CBT group learned to identify and restructure negative thought patterns—for example, “I have failed at dieting, so I might as well eat whatever I want”—into more adaptive cognitions. CBT emphasizes the modification of negative thought patterns about overweight and obesity and the enhancement of coping skills. This approach helps patients identify and restructure dysfunctional thoughts, thereby improving their emotional and behavioral responses (Mohseni et al., 2022). Individuals suffering from obesity often have difficulty perceiving their hunger signals because of cognitive restraint, disturbances in interoceptive sensitivity, or emotional eating. Consequently, CBT aimed at restoring intuitive eating and removing the psycho-emotional barriers that hinder this type of eating, which appears to be a promising approach (Lecerf et al., 2025). By focusing on how thoughts influence emotions and behaviors, CBT equips individuals with tools to confront psychological and emotional challenges. For example, individuals with overweight learn to recognize negative thoughts and replace them with more realistic and positive ones. CBT emphasizes behavioral activation and skills training, such as stimulus control, craving management, and assertiveness in social situations involving food. These components likely helped the participants to increase their self-efficacy in resisting tempting foods and to develop healthier daily routines. The intervention included relapse prevention strategies and a dependency contract, which may have strengthened long-term adherence. As noted by (Jankowska, 2025; Grilo et al., 2025), patients who undergo CBT often demonstrate improved coping strategies and reduced emotional vulnerability, which in turn supports sustainable lifestyle

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changes. Regarding the ACT intervention, the results of this study showed significant reductions in obesity-related lifestyle index scores in this group, and the effects were also sustained at follow-up. These findings were consistent with those of (Järvelä-Reijonen et al., 2018; Kaur et al.,2024) who found that ACT effectively reduced emotional eating and improved responsiveness to food cues, and with (Pitil & Ghazali ,2024) which reported increased physical activity and healthier food choices following ACT-based interventions. Furthermore, the results were consistent with the findings of the meta-analysis by (Schumacher et al.,2025) that supports ACT as a suitable treatment for obesity. Analytically, the effectiveness of ACT in the study sample can be explained through different but complementary pathways compared to CBT. ACT focuses on altering the function of internal experiences rather than their content. Participants learned to accept unpleasant thoughts and cravings (e.g., "I really want to eat that cake") without automatically acting on them, through techniques such as creative helplessness, the hungry tiger metaphor, and mindful eating exercises. As a result, this psychological flexibility allows individuals to tolerate emotional discomfort—such as stress, loneliness, or boredom—without resorting to emotional eating. Second, ACT emphasizes values clarification and committed action. In the intervention sessions, participants identified personally meaningful life goals (e.g., being healthy for their children, having more energy for work) and committed to taking value-consistent actions even in the presence of difficult thoughts or cravings. This process likely increased intrinsic motivation for lifestyle change, which is often superior to externally imposed dietary rules. Another explanatory mechanism is the use of practical educational strategies in ACT, which teach individuals to enhance psychological acceptance of internal experiences rather than cognitively or behaviorally avoiding thoughts and social situations. This leads to improved food responsiveness and healthier lifestyle choices. In this vein, active and effective engagement with emotions, avoidance reduction, reframing self-perception and challenges, reevaluating values and life goals, and commitment to socially meaningful objectives are core components of ACT (Bavi et al., 2023). The final explanation for ACT's effectiveness lies in its techniques of value clarification and committed action. Encouraging individuals with overweight to identify their values, set goals, define actions and obstacles, and commit to pursuing those goals despite difficulties enhances life satisfaction and helps them escape the cycle of negative thoughts and emotions such as anxiety, stress, despair, and depression—factors that exacerbate psychological problems (Järvelä-Reijonen et al., 2018).

The limitations of the present study the fact that it was conducted in Tehran, and in generalizing its results to other conditions, attention should be paid to situational similarities and cultural differences. Moreover, because the statistical population of this study included overweight individuals with disordered eating behaviors and attitudes, in generalizing the findings to other individuals in the community, attention should be paid to the limited and specific nature of the sample.

Conclusion

Both ACT and CBT are effective in improving obesity-related lifestyles in obese individuals. CBT for weight loss seeks to create motivation to lose weight, confront dysfunctional cognitions and behaviors, accurately identify bodily states of hunger and satiety, and adhere to a diet. ACT also emphasizes adherence to a diet, and recognition and acceptance of thoughts and bodily states. Furthermore, the results of the follow-up period, in addition to the continuation of improvement, did not show a significant difference between the two treatment methods. Given that in both treatments the two effective dimensions are emotion regulation and behavioral activation, the durability of its effect in follow-up can be explained as follows: in the emotional dimension, the burden of the individual's negative emotions is reduced. Also, with behavioral activation, the patient's lifestyle changes and his mood increases, which ultimately

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leads to an improvement in the individual's lifestyle. According to the findings of this research, these approaches can be used in medical settings alongside medical interventions for treatment and care.

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Conflict of interest

The authors declared no conflict of interest.

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Ethical considerations

All ethical considerations were observed.

Code of Ethics

(IR.IAU.NEYSHABUR. REC.1404.035).

Authors' contributions

The study was designed and conceptualized by Mohammad Reza Khodabakhsh. The methodology and data analysis were carried out by Mehdi Akbarzadeh, and the protocol was implemented by Zakieh Sadat Masoudi.

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