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Innovative methods of therapy for eating disorders

Métodos terapéuticos innovadores para los trastornos alimentarios

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SUMMARY

The study aimed to compare the effectiveness of treating eating disorders using three current approaches: cognitive behavioral therapy, physiotherapy, and a combination. The participants were 120 patients in the inpatient department of the Patonych Center for the treatment of eating disorders, with diagnoses of various types of eating disorders; the average age of patients was 31±5.5 years. The EDE-Q and EAT-26 questionnaires were used to monitor the dynamics of symptoms, and the SF-36 questionnaire was used to investigate the subjective assessment of quality of life. Cognitive skills such as attention and thinking speed were studied using the Munstenberg test. It was found that all methods positively affected the course of the disease in patients. The combination of cognitive behavioral therapy and physiotherapy demonstrated better results than each method alone, with an average EDE-Q score reduction from 30±2.98 to 15.3 ± 1.53 for the combination therapy group after six months, compared to 19.5 ± 1.58 for cognitive behavioral therapy alone. The latest method of fissiotherapy is described as an alternative method. Specialists of the appropriate profile, such as psychotherapists, can use the data obtained in the study.

Keywords: *Gestalt therapy, cognitive behavioral therapy, physiotherapy, confluence, separation, remission.*

RESUMEN

El objetivo del estudio era comparar la eficacia del tratamiento de los trastornos alimentarios mediante tres enfoques actuales: la terapia cognitivo-conductual y la fisioterapia, y una combinación de ambas. Los participantes fueron 120 pacientes del departamento de hospitalización del Centro Patonych para el tratamiento de los trastornos alimentarios, con diagnósticos de diversos tipos de trastornos alimentarios; la edad media de los pacientes era de 31 ± 5,5 años. Se utilizaron los cuestionarios EDE-Q y EAT-26 para controlar la dinámica de los síntomas, y el cuestionario SF-36 para investigar la evaluación subjetiva de la calidad de vida. Las habilidades cognitivas como la atención y la velocidad de pensamiento se estudiaron mediante la prueba de Munstenberg. Se comprobó que todos los métodos tenían un efecto positivo en la evolución de la enfermedad en los pacientes. La combinación de terapia cognitivo conductual y fisioterapia demostró mejores resultados que cada método por separado, con una reducción promedio de la puntuación EDE-Q de 30 ± 2,98 a 15,3 ± 1,53 para el grupo de terapia combinada después de seis meses, en comparación con 19,5 ± 1,58 para la terapia cognitivo conductual

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sola. El último método de fisioterapia se describe como un método alternativo. Los datos obtenidos en el estudio pueden ser utilizados por especialistas del perfil adecuado, como por ejemplo psicoterapeutas.

Palabras clave: *Terapia gestalt, terapia cognitivo-conductual, fisioterapia, confluencia, separación, remisión.*

INTRODUCTION

Eating disorders (ED) often occur in childhood and adolescence, and their consequences can be disability and death. The classification of eating disorders in medicine is continually revised and improved. This could be more concise or integrated with the subsequent sentence about the types of eating disorders. According to the International Classification of Diseases 11th Revision (ICD-11) (1), eating disorders include anorexia nervosa, bulimia nervosa, paroxysmal overeating, avoidance and restriction of food intake, parorexia, and rumination-regurgitation disorder. A separate article has been dedicated to the topic of compulsive overeating, which has received special attention in recent discussions but is not the primary focus of the current study. According to the National Institute of Mental Health (2), the prevalence of anorexia nervosa among adults is 0.6 %, bulimia – 0.3 %, paroxysmal overeating – 1.2 %.

However, many individuals remain undiagnosed, as these statistics reflect only those who seek help. Silén and Keski-Rahkonen (3) provide data that exceeds those given: anorexia nervosa during life was reported by 0.8 %-6.3 % of women and 0.1 %-0.3 % of men, bulimia nervosa – 0.8-2.6 % of women and 0.1 %-0.2 % of men, overeating disorders – 0.6 %-6.1 % of women and 0.3 %-0.7 % of men, and 0.6 %-11.5 % of women and 0.2 %-0.3 % of men reported other specific eating disorders or eating behaviors. This confirms the relevance of problems and their profound impact on the individual.

Speaking about the methods of treating eating disorders, first of all, attention should be paid to possible ways to prevent the development of this type of pathology. Kudla et al. (4), in their study of the causes of disorders among young women, conclude that this is facilitated by several negative psychological beliefs that are complicated by social situations. It is advisable to carry out preventive work in educational institutions of various levels, which will prevent the development of eating disorders among at-risk groups. First-line treatment methods include cognitive behavioral therapy, which can be performed on an outpatient basis or in a hospital setting, depending on the severity of the disease. The most significant evidence base has been accumulated for cognitive behavioral therapy (CBT), which aims to change cognitive patterns and maladaptive behavioral patterns. The disadvantage of cognitive influence methods is that they do not pay enough attention to the patient's emotional state, which forms the basis of their subjective experiences.

The purpose of this study is to compare modern, effective methods of working with eating disorders.

Various approaches to treating eating disorders are based on different conceptualizations of their etiology and pathogenesis (5). These range from a psychiatric perspective, which considers eating disorders as part of the psychotic process, to a psychoanalytic approach that is personally oriented and seeks to identify deep personal conflicts that lead to dissatisfaction with one's own body (6). The medical and physiological approach to treating eating disorders is to ascertain the objective physical condition of the patient. This entails determining the body mass index, fat, and muscle mass, identifying any deviations from the norm in general tests, and examining behavioral deviations associated with food intake. In accordance with the particular clinical circumstances, recommendations encompass physiotherapy, pharmacological and psychotherapeutic interventions (8). The psychiatric approach also employs more radical methods, such as electrical stimulation of the frontal lobes of the brain or hormone therapy (7). The application of body-oriented therapy and physiotherapy has been observed to influence the regulation of the autonomic nervous system, thereby stimulating metabolic processes and increasing overall tone.

Medications often lack effectiveness when used alone, addressing only symptoms without tackling the psychogenic causes. Usually, eating disorders are comorbid with other somatic and

mental disorders that mask their manifestations, in which case, a team of doctors of various specialties should work with the patient (9,10). An example of how important etiotropic treatment is compulsive overeating, which has been singled out in a separate category in the new edition of ICD-11. It often went unnoticed and was diagnosed and treated in other nosologies, but its consequence is a high mortality rate (11).

Russell et al. (12), in their review of current treatments for eating disorders, point out the central role of psychotherapy in treatment success. Their advantage lies in their ability to influence internal behavioral, psychological, and social factors that contribute to the development of the disease. The most significant evidence base among psychotherapy methods for the treatment of anorexia nervosa, bulimia, and compulsive overeating of various types is accumulated for CBT (12). Its principle of operation is to rethink and gradually replace cognitive circuits related to food attitudes and eating habits. Agras (13) notes that CBT is more successful in treating bulimia and binge eating disorder than interpersonal and psychodynamic therapy. The disadvantage of cognitive therapy methods is that they do not pay enough attention to the patient's emotional state, which forms the basis of their subjective experiences. Another area in eating disorders therapy is the psychoanalytic approach, according to which the causes of the disorder are dysfunctional early relationships that lead to certain pathological types of attachment, one of which may be food addiction (14). The development of a particular type of eating disorder does not occur by chance but by the need for a relationship that a person needs to fill (15).

Gestalt therapy methods derived from psychoanalysis are another group of psychological methods. The therapy uses a person-centered dialogue approach sensitive to the patient's life field and experience. The approach allows the discovery of unpleasant feelings that the patient avoids by changing eating behavior and teaching them to be in contact with these feelings (16). Seubert (17) provides clinical reports on the successful treatment of patients with eating disorders by combining the gestalt approach (the empty chair method) and the method of desensitization and processing of eye movements, which belong to the methods of exposure therapy. Thus, the variety of approaches to understanding and treating eating disorders is quite large. From the practical application standpoint, searching for the optimal combination and modification of methods is necessary, which should serve the only goal – to completely rid the patient of the disease.

MATERIALS AND METHODS

The study includes theoretical and empirical aspects. The empirical study focuses on comparing the effectiveness of the most recognized modern therapy methods — physiotherapy and CBT — as well as their combination. A necessary condition for an adequate assessment of the patient's condition and the ability to achieve therapeutic changes is to create conditions for attracting specialists of various profiles and monitoring the dynamics of therapeutic changes. These conditions are best implemented in a hospital setting. This method of patient management was employed in this study.

The study was conducted from 2019 to 2020. The participants were 120 patients of the inpatient department of the Patonych Center for the Treatment of Eating Disorders (Kharkiv, Ukraine) diagnosed with eating disorders of various types. Of these, 78 were women and 42 were men. The mean age of patients was 31 ± 5.5 years. All patients were diagnosed with eating disorders according to the *Diagnostic and Statistical Manual of Mental Disorders* fifth edition (DSM-5) criteria (18). The criteria for inclusion in the study were the diagnosis of an eating disorder, the absence of concomitant severe neurological diseases, and the patient's consent. The study had a before-and-after study (also called pre-post study) design, and the results of patients after completing therapeutic courses were compared with their results before treatment. Evaluation of therapy results was carried out by self-reporting according to generally accepted methods three times: before the start of treatment, at the end of therapy, and six months after the end of therapy.

Two methods of studying eating behavior were applied. The Eating Disorder Examination-Questionnaire (EDE-Q) consists of 12 questions; the maximum possible score on the test is 36,

and the eating disorder is likely if the result exceeds 5 points. The test is used worldwide for eating disorder screening and has proven internal consistency and high validity (19). The second method is the Eating Attitudes Test (EAT-26), which is an additional screening tool for the diagnosis of anorexia nervosa and bulimia; it is widely used in the world and has high accuracy and sensitivity (20). The questionnaire consists of 26 main questions, with a maximum score of 73, and an eating disorder is likely if the respondent scores more than 20 points.

Table 1 provides additional details on the questionnaires used in the study. It is important to note that the data collection using these questionnaires offered unique insights into various aspects of the condition of patients with eating disorders.

Table 1

Examples of questions from the EAT-26 and EDE-Q questionnaires for assessing eating disorder symptoms.

Questionnaire	Purpose	Example Questions	Scoring
Eating Disorder Examination-Questionnaire (EDE-Q)	Assess eating disorder symptoms and behaviors	- Have you felt that you had no control over your eating? - Have you deliberately tried to limit the amount of food you eat to influence your shape or weight? - Have you made yourself sick because you felt uncomfortably full?	Max possible score: 36
Eating Attitudes Test (EAT-26)	Evaluate attitudes and behaviors related to eating	- I am terrified about being overweight. - I find myself preoccupied with food. - I avoid eating when I am hungry.	Max possible score: 73
SF-36 Questionnaire	Assess subjective life satisfaction and quality of life.	- Generally, would you say your health is excellent, very good, good, fair, or poor? - During the past four weeks, have you had any of the following problems with your work or other regular daily activities due to your physical health?	Max possible score: 100 (for each scale)
Munsterberg Test	Measure cognitive function, particularly attention, and speed of thinking	During the past four weeks, how often have your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)? Among the following words, how many can you find within the given text: apple, chair, book, pen, table?	Score based on the number of words identified within a set time frame

Source: compiled by the author.

The 36-item Short Form Survey Instrument (SF-36) questionnaire was used to study the quality of life, a universal tool for determining subjective life satisfaction. The SF-36 measures eight scales: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH).

It consists of 36 questions grouped into eight scales responsible for different areas of life, which ultimately form the physical and psychological components. The maximum possible score on the test is 100. The Munsterberg test was used to assess the presence of cognitive impairment, which allows attention and the ability to concentrate to be measured. Among the alphabetic text, there are 25 words that the respondent needs to find. A good result is finding from 20 words, the execution time is 2 minutes, and a decrease in indicators shows a reduction in attention and speed of thinking.

The therapeutic course was 30 days; therapeutic sessions were conducted individually and in groups of 4-5 people, with a frequency of 2 times a week. The first group of patients received physiotherapy. Among the physiotherapy methods, electrical stimulation and heat therapy of the gastrointestinal tract (GIT) were used, which improves digestive function, and general massage, which helps to combat anxiety and affects the tone of the autonomic nervous system; procedures were performed two times a week. Breathing exercises were used to normalize the balance of the nervous system, conducted by patients independently after appropriate instruction, for 10-15 minutes daily. The second group of patients underwent cognitive behavioral therapy. The methods used included cognitive restructuring, which helped the patient overcome negative beliefs about food and replace them with more realistic ones. This included exposure to harmful and forbidden food, which was supposed to relieve the patient's fear. Training of introspection and self-regulation skills that allow the patient to be aware of their anxiety and overcome it without the help of food. Stimulating behavior change consists of encouraging healthy habits and planning a diet that should reduce the manifestations of compulsive actions in behavior. The third group underwent a combination of cognitive behavioral therapy and physiotherapy.

The data is presented as the average value plus/minus the standard deviation. Absolute data was converted to percentages to compare dates for different questionnaires. The normality analysis was performed using the Shapiro-Wilk criterion. A correlation analysis using Pearson's coefficient was applied to compare the results of other treatment options.

RESULTS

Influence of the studied methods on the main symptoms of eating disorders

Eating disorders often occur during childhood and adolescence, a critical period of psychological development typically defined as spanning ages 10 to 19. This pressure can lead to body dissatisfaction and low self-esteem, contributing to the development of disordered eating behaviors. Biological factors, including genetics and neurobiology, also play a role, with evidence suggesting that individuals with a family history of EDs or other psychiatric disorders may be at higher risk (20). Changes in brain chemistry and hormonal fluctuations during adolescence may further increase vulnerability to EDs. Social factors such as peer relationships, social media, and cultural messages about body image and weight can exacerbate these pressures, fostering a drive for thinness and dieting behaviors. Additionally, environmental factors such as family dynamics, parental attitudes toward food and weight, and exposure to trauma or stressful life events can contribute to the development of EDs. Overall, the complex interplay of these factors during childhood and adolescence creates a fertile ground for the onset of eating disorders, highlighting the importance of early intervention and prevention efforts to promote healthy body image and coping strategies in young individuals.

Most of the patients included in the study had a high degree of eating disorder. It should be noted that the experimental sample included patients on inpatient treatment who were aware of and recognized their condition and had treatment adherence. According to the EDE-Q method, the average score in the group before the start of therapy was 29.43 ± 1.15, with the maximum possible 36 points (Figure 1). As mentioned above, testing was carried out using two methods for double control. The results of both tests are presented graphically. According to the results of both tests, all patients had high levels of eating disorders before starting treatment.

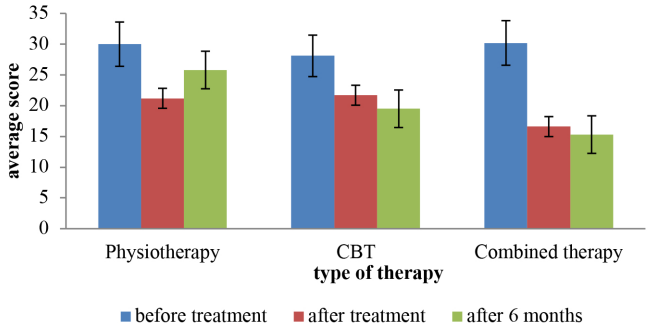

Figure 1. Effectiveness of various types of therapy about the main symptoms of eating disorders using the EDE-Q method.

As can be seen in Figure 1, all types of therapy were effective and helped reduce the subjective symptoms of eating disorders. Physiotherapy reduced the average EDE-Q score to 21.2 ± 1.87 points (the initial score in the group was 30 ± 2.98). The average score in the study group using the EAT-26 method was 63.1 ± 4.06, with the maximum possible 73 points. Therefore, the results are pretty high for both methods, with the Pearson correlation coefficient between the data being 0.21 ($p \leq 0.05$). According to the EAT-26 method, the average score decreased to 46±5.96 (before treatment, it was 62.2±3.88); the reduction in both tests showed significant differences compared to the control ($p \leq 0.05$) (Figure 2). Thus, dynamics were observed in the physiotherapy groups; patients reported better well-being and less concern for restrictive behavior. Unfortunately, after half a year of follow-up, the positive dynamics did not persist, and there was a certain return of eating disorder symptoms in many patients, although some results persisted. Thus, according to EDE-Q results, the average score was 25.8 ± 2.2, and the second method was 53.5 ± 8.64 points. The effect of physiotherapy treatment was pronounced but unstable; possibly, no impact on the cause of the disease was carried out.

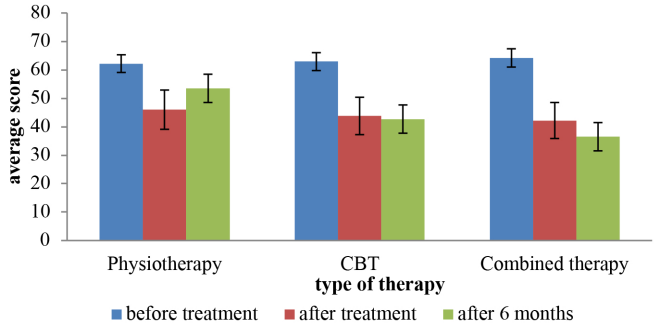

Figure 2. Effectiveness of various types of therapy about the main symptoms of eating disorders according to the EAT-26 method

In the group undergoing CBT therapy, the average EDE-Q score decreased to 21.27 ± 3.09 points (the initial score in the group was 30±2.98), and the EAT-26 score decreased to 44.8 ± 8.13 (before treatment, it was 62.2 ± 3.88), the reduction in both tests showed significant

differences compared to the control ($p \leq 0.05$). Thus, the dynamics were quite noticeable; another positive aspect of therapy was the preservation of positive changes, which were fixed and continued six months after the end of treatment. According to the EDE-Q method, the average score was 19.5 ± 1.58, and according to the EAT-26 method – 42.8 ± 6.48. The results were preserved by comparing data after treatment and after half a year. Therefore, the disease at least did not progress, and some patients reported a significant improvement in well-being and hope for a final recovery.

The severity of eating disorder symptoms at the beginning of treatment can significantly affect the outcome of therapy. Generally, individuals with more severe symptoms may experience more significant challenges in achieving successful treatment outcomes than those with milder symptoms. Patients with severe symptoms may require more intensive and comprehensive treatment approaches, including a more prolonged duration of therapy, closer monitoring, and possibly a combination of therapeutic modalities. These individuals may also have co-occurring medical or psychological conditions that need to be addressed concurrently, which can further complicate treatment outcomes. Severe symptoms may indicate deeper underlying issues or a longer duration of illness, making it harder to achieve significant improvements within a short timeframe. It may take more time and effort to address the root causes of the eating disorder and develop sustainable coping mechanisms.

However, it's essential to note that the effectiveness of therapy can vary depending on individual factors such as motivation, readiness for change, social support, and the quality of the therapeutic relationship. Despite the challenges posed by severe symptoms, many individuals can still achieve meaningful progress and recovery with appropriate and tailored treatment interventions. Early intervention, comprehensive assessment, and personalized treatment planning are crucial in optimizing therapeutic outcomes for individuals with varying symptom severity.

The results in the combination therapy group were the most encouraging: most patients not only kept their eating disorder levels at the post-treatment level but also reduced them after six months. The results after treatment also showed significant positive dynamics: 16.6 ± 2.84 points according to the EDE-Q method (the initial score in the group was 30 ± 2.98). According to the EAT-26 method, the average score decreased to 42 ± 9.35 (before treatment, it was 62.2 ± 3.88); the reduction in both tests showed significant differences in both tests compared to the control ($p \leq 0.05$). Six months after treatment, the positive dynamics continued: according to the EDE-Q test, patients scored an average of 15.3 ± 1.53 points, and according to the EAT-26 method – 36.5 ± 6.18. Consequently, the final follow-up results were almost twice as low as those obtained before treatment and dropped to the average level. This means that patients reported reduced anxiety associated with their body assessment, food intake, and frequency of restrictive behavior.

A good result is one in which the patient continues to recover after discontinuation of treatment, which also means that it was possible to achieve etiopathogenetic effects and influence the cause of the disease. Summary data on the percentage of symptom reduction for each of the methods used are shown in Table 2. As can be seen, psychotherapy treatment using both methods had a pronounced and lasting effect, and combination therapy had the best results in the long term. However, despite the positive dynamics, the results in half a year were far from full recovery because the thresholds at which the EDE-Q test determines eating disorders are 5 points and by the EAT-26 test – 20 points.

As can be seen from Table 2, psychotherapeutic methods had a more pronounced and, most importantly – lasting effect on relieving the symptoms of eating disorders.

Influence of the methods under study on the quality of life of patients

Self-assessment of one's condition is an important, but not the only indicator of the condition of patients with eating disorders. Next, consider the accompanying indicators of the patient's condition, namely their emotional (assessed by the methodology for determining the level of subjective quality of life) and cognitive (assessed by the Munsterberg cognitive test) characteristics. The initial subjective physical

Table 2

Comparison of the effectiveness of different types of therapy in relation to the main symptoms of eating disorders using the EAT-26 and EDE-Q methods, %

Questionnaire	Type of Therapy	Physiotherapy	CBT	Combination of methods
EDE-Q	After treatment	29.33	22.78	28.15
	After six months	14	30.6	35.43
EAT-26	After treatment	26.05	30.37	34.27
	After six months	13.99	32.11	43.15

Source: compiled by the author.

and mental well-being level on the SF-36 a-scale was 36.33 ± 9.47, corresponding to a below-average level with a maximum possible score of 100 (Figure 3). The condition of patients had a reasonably wide variation; all patients reported a depressed psychological state, and decreased energy; especially severe was the physical condition of patients with anorexia, who had objective medical problems associated with metabolic disorders.

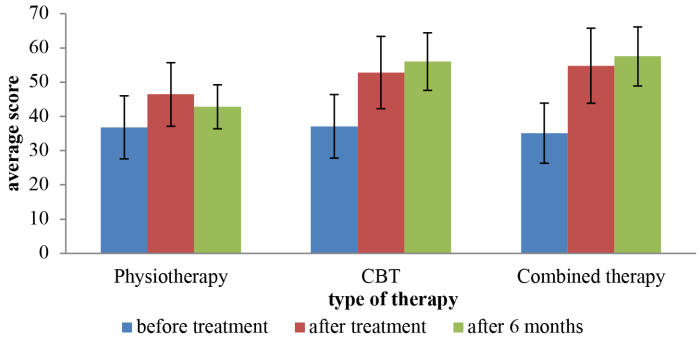

Figure 3. Effectiveness of various types of therapy in improving the patient's quality of life (according to the SF-36 method).

In general, all the applied therapeutic methods had a pronounced positive effect on normalizing the state of subjective well-being; perhaps the situation of applying to a medical institution, recognizing their problems, gave hope for their overcoming to patients and contributed to improving their psychoemotional state. At the end of treatment, the results in all groups were very similar: the group receiving physiotherapy treatment had test scores of 46.4±9.09 (before therapy, the level in this group was 36.8 ± 9.61). After six months, the indicators slightly decreased – 42.8 ± 8.68, which may be due to some deterioration of the condition due to the return of symptoms of the underlying disease. In the CBT group, the average test score was 52.8 ± 9.67 (before treatment the level was 37.1 ± 9.64).

After six months, the results remained at a high level – 56 ± 10.1, which correlates with the results of therapy for the underlying disease. In the group for which combination therapy was used, this indicator was 54.8 ± 8.33 (35.1 ± 10.45 at the beginning of the study). However, the most favorable results were obtained half

a year after undergoing therapy – 57.5 ± 7.13, almost twice the results before starting treatment. Consequently, the indicators of happiness after applying the combined approach are very close to the values obtained because of CBT alone, which indicates that psychotherapeutic methods are more effective in these types of disorders. A positive indicator is that the test scores increased significantly after six months compared to the end of treatment. This may indicate that the therapeutic effect was effective in the cause of eating disorders. Consequently, there is a pronounced negative correlation between the symptoms of the disease and the assessment of own psychophysical well-being (Pearson correlation coefficient – 0.19, $p \leq 0.05$).

Influence of the methods under study on cognitive indicators of attention and thinking speed

The Munsterberg cognitive attention test results did not reveal a statistically significant decrease in attention in patients before starting treatment. However, some dynamics were still found because of therapy. Before treatment, the average score among respondents was 17.33 ± 1.77. The score corresponds to the number of words the patient could detect (the maximum number is 25; a high result is finding 20 words and above). In the group undergoing physiotherapy, the average score was 17.3±1 .48 after completion of treatment and 18.9±0.87 after six months (the initial score in the group was 17.3 ± 1.7). In the CBT group, after completing therapy, the result was 19.6 ± 1.34; after six months, it increased to 20.3 ± 1.15 (the initial score was 17.5 ± 1.61). Such a positive effect may be associated with the mechanism of CBT itself since it is aimed precisely at developing cognitive skills of attention, self-control, and concentration. The results are shown in Figure 4.

The effect of combination therapy on the studied indicator was also positive: after the end of treatment, it was 1 8± 0.88, and after six months – 20.5 ± 1.16 (before treatment – 17.2 ± 1.62). Therefore, the test results support the overall positive dynamics of combination therapy results. As can be seen from the results, the best results were achieved with CBT after the end of therapy, which is quite an expected result since the work with cognitive skills, attention, and self-control is the object of such treatment. The combination of methods did not significantly affect these indicators compared to CBT. To assess the speed of cognitive responses, the test execution time was recorded using the Munstenberg method. According to the method, it takes 2 minutes and 120 seconds. The distribution of results was as follows. The average time to start treatment was 129 ± 13.25 s.

Although the researchers did not aim to compare patients with different types of eating disorders in this study, patients with anorexia were particularly prominent among the general sample, so the test results were analyzed separately for this group of patients. The average time in this group was 139±5.2, which is higher than the average in the sample. Such indicators may be associated with physiological features of the condition, namely, a slowdown in protein metabolism, which

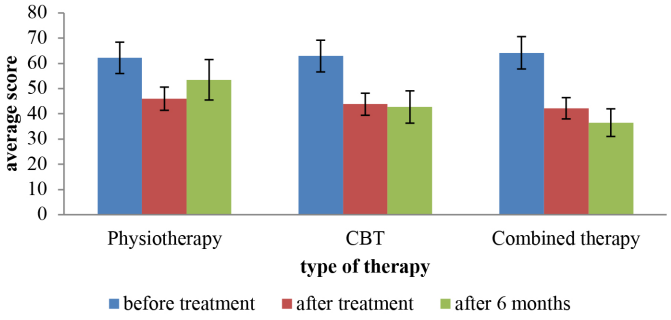

Figure 4. Effectiveness of various types of therapy in improving attention according to the Munstenberg method.

worsens the overall functioning of the nervous system, in particular, mediator transmission. In the group undergoing physiotherapy, the average test lead time was 126.5 ± 9.58 s after treatment and 117.2 ± 7.61 s after six months (the initial score was 127.9 ± 16.17 s). The changes were not statistically significant as to be noticed without special techniques, but a positive trend was observed. The data is shown in Figure 5.

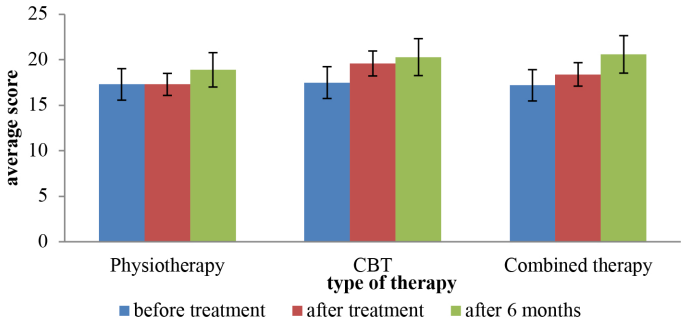

Figure 5. Effectiveness of various types of therapy in improving the speed of passing the Munstenberg test

In the CBT group, the test completion rate was 123.1 ± 11.84 s after treatment, and after six months, the results continued to improve – 116.7 ± 8.52 (before treatment 130.4 ± 14.23). The test lead time in the combination therapy group was 116.3 ± 10.34, which persisted after six months – 115.7 ± 8.17. Consequently, almost all results after treatment were within the normal range. Therefore, there was no pronounced violation of patients' thinking speed before treatment. There were no statistically significant differences in the thinking speed after treatment with different methods.

Comparison of the results of combination therapy with individual methods

Integrating technology, such as mobile apps and teletherapy, can significantly enhance the delivery and effectiveness of treatment methods for eating disorders. These technological innovations offer various benefits, including increased access to treatment for individuals in remote or underserved areas, greater convenience and flexibility in scheduling therapy sessions, and real-time monitoring of symptoms and progress. Additionally, technology-based interventions provide opportunities for psychoeducation, skill-building exercises, and peer support, empowering individuals to make informed decisions and develop healthier coping mechanisms. With personalized interventions tailored to the individual's needs and preferences, technology-enabled treatments hold promise in improving engagement, monitoring, and outcomes for individuals with eating disorders. However, it's crucial to ensure that these interventions are evidence-based, user-friendly, and culturally sensitive, and ongoing research is needed to evaluate their long-term impact on eating disorder recovery.

Applications like Recovery Record and MyFitnessPal help users track their food intake, mood, and behaviors, promoting self-awareness and accountability. These apps also allow users to set goals, receive reminders, and access educational resources about healthy eating and coping strategies. Teletherapy platforms like Talkspace and BetterHelp reduce barriers to care, especially for those in remote or underserved areas (21). These technological innovations

offer increased access to treatment, eliminating travel and wait times associated with in-person therapy. Real-time monitoring of symptoms and progress allows healthcare providers to make timely adjustments to treatment plans. Technology-based interventions often include psychoeducation, skill-building exercises, and peer support.

Personalized interventions tailored to individual needs and preferences can improve engagement, monitoring, and outcomes for individuals with eating disorders. Mobile applications can allow users to customize tracking and reporting features based on treatment goals, increasing motivation and commitment to recovery. However, ongoing research is needed to evaluate their long-term impact on eating disorder recovery and identify best practices for integrating technology into traditional therapeutic approaches.

Summing up all the study results, all the methods studied positively affected the course of eating disorders in the studied patients. The results obtained indicate that the studied methods of therapy show positive results, according to the following leading indicators:

- reduction of symptoms of the underlying disease and neurosis-like phenomena associated with food intake.
- increasing sense of overall well-being.
- approximation of cognitive indicators (attention, speed of analysis) to normal.

The results of CBT and its combination are more stable than when using physiotherapy methods and continue improving after six months. Thus, the effectiveness of commonly used CBT methods has been experimentally confirmed. However, the results obtained cannot be considered satisfactory since patients did not experience complete remission, and the indicators of tests for eating disorder symptoms remained high half a year after treatment. This encourages the search for more effective methods that can affect the cause of the disease and reduce symptoms to a level that indicates a low level of problems with eating behavior or their complete elimination.

DISCUSSION

Recently, more and more modern neurobiological studies have shown that eating disorders lead to changes in brain function and structure (21) and have a genetic and neurological predisposition (22). Physiological and biochemical changes that occur in the body of patients with eating disorders also include disorders of the gastrointestinal tract and excretory system, changes in electrolyte balance, metabolic disorders, and lack of nutrients. Physiotherapy methods of influence that help restore the balance of the autonomic nervous system and harmonize brain function may be the choice for eating disorders (8). These problems can be corrected with the help of the physiotherapy methods considered in the present study. Previous studies on this topic have found a positive effect of physiotherapy on the relief of eating disorder symptoms. Vancampfort et al. (23) analyzed eight studies demonstrating relief of the condition in anorexia (gaining muscle and fat mass) as well as in bulimia (reducing the frequency of purging). Almirón et al. (8) investigated the effects of physiotherapy and body-oriented therapy on the course of eating disorders. They conclude that such types of treatment have a significant positive impact on the balance of the autonomic nervous system and activate the parasympathetic system and cognitive processes, which helps the patient to restore the connection with their own body and realize its condition and needs.

Consequently, all the methods used had a positive effect on reducing the symptoms of eating disorders. The atmosphere of support and understanding that prevailed during and between hospital stays during sessions contributed to the positive developments. Patients often reported that when they were admitted to a medical facility and found themselves near people with similar disorders, they felt that they were not alone in their problem. In the study of factors of eating disorder development, Kudla et al. (4) point to issues such as negative assessment of own body, low auto-sympathy, self-expression anxiety, and autonomic reactivity. They also confirm that for most patients with eating disorders, group therapy has more positive effects, which allows for overcoming these problems. The

inpatient treatment model implemented in this study, supplemented by group therapy sessions, performs the necessary role of providing the receiving social environment; meeting social needs is one of the weighty reasons for the success of various psychotherapeutic approaches in eating disorders.

CBT was more effective than physiotherapy for all the indicators under study. This result is consistent with most current studies on the treatment of eating disorders. Russell et al. (12), in a meta-review covering 28 papers on this topic, conclude that psychotherapy methods are the most effective in the treatment of eating disorders; among them, CBT stands out, especially as the method with the greatest evidence base, as well as interpersonal and dialectical therapy. Bruzas and Allison (7) also describe CBT as one of the most effective treatments for eating disorders, and they draw attention to the fact that for the treatment of bulimia and binge eating disorder, this method is the therapy of first choice. Sometimes, the same therapeutic goals can be achieved within different psychotherapeutic approaches; for example, Fioravanti et al. (24) describe the results of a pilot study on the introduction of metacognitive interpersonal therapy and indicate that the effectiveness of CBT methods can enhance the development of metacognitive skills, the ability to look at the problem of eating disorders separately from the personality. The presented study noted positive changes in the attention, concentration, and thinking speed indicators.

A combination of the two methods under study provided the most pronounced positive effect on reducing the symptoms of eating disorders and subjective feelings of happiness in the long term. Almirón et al. (9) also prove that the combination of physical and cognitive therapy positively affected the cognitive performance of patients with eating disorders; this effect was mediated by normalizing the balance of excitation and inhibition of the nervous system. According to the authors' observations, patients who received physical therapy were more balanced and calmer, which allowed them to improve their ability to concentrate. In a meta-review, Udo and Grilo (25) point out that when analyzing a large body of research, it turns out that CBT is effective specifically for cognitive skills. At the same time, its results are comparable to other types of psychotherapy for different symptoms. This study also demonstrated that CBT and combination therapy improve attention, with the outcome remaining stable over time.

The authors of the study have developed the latest method of fissiotherapy, which belongs to the methods of the transactional-analytical approach. The key concept within the approach is the concept of the eating disorder radical. This is a holistic course of action, represented by one of the types of adaptation of eating behavior, which the patient stereotypically repeats to reduce internal anxiety. The development of the ED radical, as a stereotypical mode of action within the framework of eating behavior, is considered from the position of a psychoanalytic approach as a certain type of adaptation to the negative, destructive life background in which the patient is located. The ED radical becomes a universal means of protection against external problems, pain, fear of loneliness, and anxiety, giving the patient a sense of security. According to the author's hypothesis, the stages of eating disorder development include the stage of reflexive relationships, at which the ED radical is formed; it can be realized to a greater or lesser extent, the patient begins to use an anorexic, bulimic, or compulsive type of adaptation for emotional self-regulation.

In the second stage, the patient chooses the ED radical as the dominant type of relationship and separates from the environment. In the third stage – confluence, the patient does not feel the boundaries between their personality and the ED radical. At the last stage, the patient is unaware of themself; they are entirely absorbed in a maladaptive behavioral pattern. At this stage, the probability of mortality is highest (up to 95 %). The disease closes the patient's need for a trusting relationship, endowing them with a particular subjectivity. It is difficult to make the patient change their habits without resolving this conflict because the disease and its behavioral pattern are the subject of the patient's dependence.

A psychotherapist working within the approach should help the patient re-isolate their personality from the ED radical. Therapy is aimed at establishing a trusting relationship between the therapist and the patient, creating a positive

"vital" life background in the patient, which allows you to see and recognize the ED radical and separate its influence on the personality from the core of the personality, allows getting to the psychological causes of eating disorder – establishing a symbiotic relationship with the ED radical. Awareness of its impact on the individual and separation creates space for new relationships. The therapist plays an essential role in this process, is the first safe object for the patient, and makes a "welcoming" life background in which there is hope for recovery. The proposed method allows for quick interventions: to understand the problem, take responsibility for one's behavior, and separate one's desires and motives from the ED radical. A cumulative effect can be expected from combined methods, particularly physical exposure methods and the developed fissiotherapy method.

Analytical approach methods are often used in the practice of assisting with eating disorders. Caranfil (26) describes a clinical case of a patient with anorexia nervosa who was treated as part of a gestalt therapy approach. It was found that the cause of the disorder was the early loss of a significant relationship (mother), which the patient symbolically expressed and placed in the refusal to eat. The author of the study concludes that the relationship with food for patients with ED is a form of love; without understanding this fact, therapy can be unproductive. Zhang (27) highlights the important role of the negative effect, which plays a key role in the stage of eating disorder development and consolidation, so therapy should be planned to identify and replace these negative emotions. According to Fioravanti et al. (24), an important factor in therapy that can contribute to full recovery is the development of interpersonal skills and the development of the ability to build trusting relationships, which the fissiotherapy approach is based on.

Regardless of the methods chosen for therapy, an important factor in the implementation of comprehensive care in the final solution of the problems of patients with eating disorders is an integrated approach to monitoring the patient's condition, monitoring the effectiveness of treatment, and managing it after the completion of the therapeutic course (28). This is highlighted by Özbaran et al. (29) and Sadvakassova et al. (30) in their study on developing a monitoring system for children and adolescents. They emphasize the importance of patient management by specialists of different profiles to monitor various parameters (mental, physical, and behavioral), including after discharge from a medical institution. Pehlivan et al. (31), in a review on the effectiveness of providing medical and psychotherapeutic care to patients with eating disorders, indicate the presence of such problems as insufficient diagnosis, long waiting lists, and a lack of monitoring of patients by specialists. In this regard, the authors point out that the solution for most of these problems is short-term hospitalization with specialists of various profiles who can adequately assess the patient's condition, prescribe therapy, and monitor its effectiveness (32).

When it comes to psychotherapy, it is especially important to establish personal contact between the therapist and the patient. The authors of the study implemented this comprehensive and customer-oriented approach. Further research will aim to study the combination of the newest therapy method with physical rehabilitation methods, including in the long-term time dimension, as the ultimate goal of therapy is the patient's full recovery and return to a healthy lifestyle and diet.

The study has promising results, but its limitations need to be acknowledged. The sample size was limited to 120 patients from a single institution, which may affect the generalizability of the findings. Future research should include diverse populations and longer follow-up periods to assess the long-term effects of the interventions. Relating to self-reported questionnaires for assessing symptoms and quality of life may introduce biases. Future studies should explore a broader range of treatments, including emerging therapies and their combinations. The absence of a control group limits the ability to draw definitive conclusions about the efficacy of treatments compared to no treatment. Addressing these limitations and suggesting areas for further research can enhance our understanding of eating disorder therapies and develop more effective treatment strategies.

CONCLUSIONS

This research compared the effectiveness of two commonly used treatments for eating disorders based on two different approaches, CBT and physiotherapy, as well as a combination of them. It was demonstrated that the studied methods had a pronounced therapeutic effect in reducing the main symptoms of eating disorders. The results obtained when treating patients with physiotherapy methods were unstable, and after six months, there was a partial return of eating disorder symptoms. After six months in the physiotherapy group, subjective sense of well-being indicators decreased.

The results of CBT after half a year remained at the same level and even slightly improved. Patient outcomes in the combination therapy group continued to improve, with patients reporting further reductions in dietary restrictions and anxiety around food intake and the emergence of hope for a full recovery. It also demonstrated a positive effect on the perception of subjective well-being of patients and the normalization of cognitive skills – attention and speed of thinking. Positive changes were observed in all the study groups. The effect of combination therapy was longer compared to each method separately and even continued to increase after the end of therapy. This suggests that this type of psychotherapeutic influence can identify and influence the cause of eating disorders. Within the framework of this approach, such a reason is the establishment of a confluent relationship with the ED radical, which leads to a gradual loss of personality. In the process of psychotherapy, the therapist manages to build a trusting relationship with the patient and help separate the ED radical from the patient's personality.

The results of physiotherapy were less stable, probably because of the physiological consequences of the disease, while the causes should be sought in the mental sphere of patients. Therefore, physiotherapy can be used as a recommended but additional method of treating patients with eating disorders. Further study will aim to investigate the combination of methods of physical and psychotherapeutic influence with other methods of treating eating disorders, in particular, the latest method of fissiotherapy.

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