

# Nutritional management in the early stages of therapy for *bulimia nervosa* – a proposed nutritional model

Zarządzanie żywieniem na początkowych etapach terapii *bulimia nervosa*: proponowany model żywienia

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## ■ Abstract

**Introduction and Objective.** Bulimia nervosa (BN) is an eating disorder characterized by episodes of binge eating and the use of compensatory behaviours to control body weight. Epidemiological data suggest that BN may affect approximately 4% of the population and occurs more frequently in women. The aim of the study was to develop a preliminary proposed nutritional model for use by patients in the early stages of bulimia nervosa therapy, based on available literature and personal experience.

**Review Methods.** A literature review was conducted by analyzing two scientific databases: PubMed and Google Scholar. The following key words were used: 'dietary treatment', 'medical treatment', 'bulimia nervosa', 'diet' and 'nutrition'. Publications from 2014–2024 were considered. No language restrictions were applied. The selection of articles was conducted individually. Ultimately, 50 articles were analyzed. Key words and abstracts were reviewed first. Subsequently, the full texts were read, and a final selection was made based on the subjective assessment of relevance to the topic of dietary management in the treatment of bulimia nervosa.

**Brief description of the state of knowledge.** As BN can lead to various complications, early diagnosis and the implementation of effective treatment are crucial. Impaired perception of hunger and abnormal portioning of food can be among the primary long-term complications for individuals suffering from BN.

**Summary.** In the early stages of treatment, the diet should focus on correcting deficiencies that pose a risk to the patient's health. Additionally, to address the sensation of excessive hunger, it is beneficial to implement a volumetric diet, with nutritional value adjusted to the patient's body weight. The priority of nutritional treatment is to develop a positive relationship with food.

## ■ Key words

nutrition, therapy, bulimia nervosa, dietary treatment

## ■ Streszczenie

**Wprowadzenie i cel pracy.** *Bulimia nervosa* (BN) to zaburzenie odżywiania charakteryzujące się epizodami objadania się i przejawianiem zachowań kompensacyjnych w celu kontrolowania masy ciała. Dane epidemiologiczne sugerują, że BN może dotyczyć około 4% populacji. Częściej występuje u kobiet. Celem badania było opracowanie, na podstawie dostępnej literatury i własnych doświadczeń, wstępnego modelu żywieniowego, który mógłby być stosowany u pacjentów na wczesnych etapach terapii *bulimia nervosa*.

**Metody przeglądu.** Przegląd literatury przeprowadzono, analizując dwie naukowe bazy danych: PubMed i Google Scholar. Użyto w tym celu następujących słów kluczowych: „leczenie dietetyczne”, „leczenie medyczne”, „bulimia nervosa”, „dieta” i „odżywianie”. Uwzględniono publikacje z lat 2014–2024. Nie zastosowano żadnych ograniczeń językowych. Selekcja artykułów została przeprowadzona indywidualnie. Ostatecznie przeanalizowano 50 artykułów. Najpierw przejrano słowa kluczowe i abstrakty. Następnie przeczytano pełne teksty i dokonano ich ostatecznego wyboru na podstawie subiektywnej oceny ich istotności dla tematu postępowania dietetycznego w leczeniu bulimii psychicznej.

**Opis stanu wiedzy.** BN może prowadzić do różnych powikłań, dlatego kluczowe znaczenie ma wczesna diagnoza i wdrożenie skutecznego leczenia. Upośledzona percepcja głodu i nieprawidłowe porcjowanie jedzenia zaliczane są do głównych długoterminowych powikłań u osób cierpiących na *bulimia nervosa*.

**Podsumowanie.** Na wczesnych etapach leczenia BN dieta powinna przede wszystkim służyć korygowaniu niedoborów, które stanowią zagrożenie dla zdrowia pacjenta. Dodatkowo, w celu zniwelowania uczucia nadmiernego głodu, korzystne jest wdrożenie diety wolumetrycznej, o wartości odżywczej dostosowanej do masy ciała pacjenta. Priorytetem leczenia żywieniowego jest wypracowanie u pacjenta pozytywnej relacji z jedzeniem.

## ■ Słowa kluczowe

terapia, *bulimia nervosa*, leczenie żywieniowe, żywienie

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## INTRODUCTION

Bulimia nervosa (BN) is a severe eating disorder that affects a significant proportion of the population, particularly young women. BN is characterized by cyclical episodes of excessive food consumption, accompanied by compensatory behaviours, such as self-induced vomiting, the use of laxatives, or excessive physical activity, all aimed at controlling body weight [1,2].

Epidemiological statistics indicate that BN affects 3% – 4% of the population, with a clear predominance in the group of girls and young women [3]. Although BN is more commonly diagnosed in women, a growing number of cases among men suggests the need for broader research into this phenomenon [4]. Despite advancements in technology and new therapeutic methods, the treatment of BN remains a challenge, and full recovery for many patients is still difficult to achieve [5,6].

An integral element of bulimia is binge eating, which can occur with varying frequency and last from a few minutes to several hours [7]. During these episodes, patients lose control over the amount of food consumed, leading to serious health consequences, both physical and psychological [8]. Chronic use of compensatory methods causes numerous health complications, including electrolyte imbalances, gastrointestinal issues, cardiovascular disorders, and various mental health problems, such as depression and anxiety [9,10].

Despite numerous studies on the treatment of BN, there is still a lack of nutritional models effectively integrated with psychological and behavioural therapy [11]. Most available studies focus on psychotherapeutic and pharmacological interventions, with few examining specific nutritional models that could reduce the severity of binge eating episodes, and limit the need for compensatory behaviours [12,13]. There is a clear need to develop and empirically investigate a nutritional model that could be used in the early stages of BN therapy, thereby supporting treatment effectiveness and reducing the risk of relapses [14].

## OBJECTIVE

The aim of the study is to develop and propose a nutritional model for use in the early stages of bulimia nervosa therapy. This model is based on a thorough review of the available literature and clinical experience. Its application aims to support therapy by reducing the severity of binge-eating episodes and limiting the need for compensatory behaviors [15].

This study is significant for several reasons. First, it provides an innovative approach to treating BN that integrates dietary, psychological, and behavioural interventions [16]. Second, the proposed nutritional model has the potential to significantly improve patients' quality of life by reducing symptom severity and the risk of health complications [17]. Finally, this study may serve as a foundation for future research on dietary interventions in treating eating disorders [18].

## MATERIALS AND METHOD

A literature review was conducted focused on articles related to the treatment of bulimia and case reports describing

patients with bulimia nervosa. Two scientific databases, PubMed and Google Scholar, were used to search for relevant articles. The review was conducted in April 2024. The following keywords were used: 'dietary treatment', 'medical treatment', 'bulimia nervosa' and 'diet'. Publications from 2014–2024 were considered. No language restrictions were applied during the search, but most selected studies were in English or Polish. Article selection was performed individually based on relevance to the research topic. Key words and abstracts were reviewed first, followed by a full-text analysis, which allowed for the final selection. Original research articles were prioritized, although literature reviews were also included to gather as much information as possible regarding nutritional treatment methods for patients with BN. A selection of information related to diet in the treatment of bulimia was made from articles based on subjective agreement with the research topic of the paper.

**Current approaches to nutritional treatment.** Eating disorders have long presented challenges for specialists. Psychological treatment is crucial, considering that the mind plays a primary role in the etiology of eating disorders [19]. On the other hand, the very name of the disorder highlights the nutritional aspects of the problem. Therefore, nutritional treatment appears to be an integral component of the therapeutic plan [20].

Four dietary models used in the nutritional treatment of BN were analyzed (Tab. 1). Each diet had its assumptions, advantages, disadvantages, and potential effects of its application. In addition to specific therapeutic effects, such as reducing hunger, decreasing the frequency of binge episodes, or improving mental health, each diet is primarily aimed at helping patients develop healthy eating habits and the ability to eat rationally.

**Cautious promotion of physical activity.** Regular physical activity reduces the risk of many diseases and improves mental health and the overall quality of life. Current recommendations for adults suggest 150–300 minutes of moderate activity or 75–150 minutes of vigorous activity per week [24,25]. Excessively high levels of physical activity often affect individuals with eating disorders. In the available literature, this phenomenon is referred to as compulsive activity, hyperactivity, the need for activity, or exercise addiction [26]. Patients with BN may engage in compulsive physical activity to mitigate the effects of binge eating episodes. It is important to note that excessive involvement in sports or a chosen physical activity can be harmful and, in some cases, lead to addiction [27]. Primary exercise addiction develops as an independent condition involving dependency on physical activity and compulsive engagement in sports, with the sense of 'reward' derived from completing the activity. Secondary exercise addiction occurs in conjunction with other disorders, such as BN. In this case, hyperactivity serves to achieve a goal not directly related to exercise; therefore, the 'reward' is only indirectly connected to completing physical activity [27,28]. Physical activity in BN therapy requires a holistic approach to prevent the development of a 'dependency' on exercise in patients.

**Similarity between bulimia nervosa and food addiction.** Food addiction (FA) is a disorder often diagnosed within the spectrum of eating disorders, particularly in individuals

**Table 1.** Comparison of Diets Used in the Treatment of Bulimia Nervosa

Diet	Authors	Year of publication	Assumptions	Advantages	Disadvantages	Effectiveness in Treating BN
Volumetric Diet	Rolls B.	2007	Consuming foods with low energy density, which allows for larger portions while restricting calorie intake	It increases the feeling of fullness, which may reduce binge eating episodes	It may lead to excessive consumption of low-calorie but nutritionally poor foods	It may be effective in reducing binge eating episodes by increasing feelings of fullness and control over eating
Low-Carbohydrate Diet	Mitchell JE, Peterson CB	2020	Reduction of carbohydrate intake, with an increase in proteins and fats	It may improve hunger control and reduce binge eating episodes.	It can be difficult to maintain in the long term and carries a risk of nutrient deficiencies	It may be effective, but its maintenance is difficult, which can lead to relapses
Mediterranean Diet	Hay P, Mitchison D, Collado A	2020	High intake of vegetables, fruits, fish, and olive oil; low intake of red meat	Rich in antioxidants and unsaturated fatty acids, it supports mental health	It may be difficult to implement due to the cost and availability of ingredients	It may improve overall mental health, which positively impacts the treatment of bulimia
Vegetarian Diet	Dittfeld A, Koszowska A	2013	Elimination of meat in favor of plant-based protein sources and vegetables	Reduction of the risk of chronic diseases, support for mental health	Risk of protein and vitamin deficiencies if not properly balanced	It may improve treatment outcomes, especially when accompanied by psychological support

Source: Own compilation based on Hay P, Mitchison D, Collado A [4], Rolls B [21], Mitchell JE, Peterson CB [22], Dittfeld A, Koszowska A [23]

with bulimia [29]. In the literature, FA is also referred to as a subtype of obesity. However, FA can occur without the development of excessive body weight or compulsive overeating (Binge Eating Disorder – BED) [30,31]. The relationship between BN and FA suggests that reducing the intake of foods with addictive potential may be effective in treating BN. The foods and dishes considered to be the most addictive for individuals with FA include chocolate, ice cream, pizza, cookies, chips, cakes, popcorn, cheeseburgers, cupcakes, breakfast cereals, gummy candies, fried chicken, sugary sodas, and rolls [32]. Each product listed is highly processed and has pharmacokinetic properties like those of drugs (concentrated dose, rapid absorption rate) [29]. In the treatment of BN, it is important to aim for diet liberalization. However, eliminating potentially addictive foods from the menu may bring benefits and help prevent relapse.

**The volumetric diet.** The volumetric diet is a nutrition model developed by B. Rolls in 2000 [21]. The diet focuses on consuming foods with low-calorie density which can be calculated by dividing the number of calories by the number of grams of the product [33]. Based on calorie density, food is divided into 4 categories [34]:

**Category One (calorie density < 0.6)** – the foundation of the diet and foods that provide a sense of fullness, such as non-starchy vegetables, fruits (e.g., apples, grapefruit), low-fat dairy products and their alternatives, and broth-based soups.

**Category Two (calorie density 0.7–1.5)** – foods that can be consumed in moderate amounts and are healthy when eaten in moderation, such as poultry, lean pork, legumes, starchy vegetables, and whole grain cereal products.

**Category Three (calorie density 1.6–3.9)** – foods that should be consumed in small portions, such as fatty meats and fish, full-fat dairy products, wheat pasta, and white rice.

**Category Four (calorie density 4–9)** – highly processed or fatty foods that should be eaten rarely, such as fast food, sweets, chips, oils, and seeds.

Developing a meal plan for a person with BN based on the principles of the volumetric diet may be a practical

therapeutic approach. Individuals who have the urge to consume large amounts of food will be able to do so without experiencing feelings of guilt afterward, which can help prevent relapse of the disorder.

**Reducing the feeling of excess body weight.** The feeling of being overweight can be defined as the experience of carrying excess weight, which does not always correspond to the actual body mass [35]. This illusionary perception is often a key aspect of many eating disorders, including BN. The experience leads to perceiving oneself as having excessive body weight, which in turn worsens the progression of the disorder [36,37]. A study by Hill et al. [37] found that the feeling of being overweight was highest among individuals with binge eating. Following the diet can modulate the perception of carrying excess weight. In the meal plan for individuals with BN, it is important to avoid foods that stay in the stomach for a long time, products that cause bloating, and those that are difficult to digest.

**Regular meal consumption as a method of preventing relapse.** Starvation or following low-energy diets is one of the behaviors used by people with bulimia to compensate for binge eating episodes. Research indicates that dietary restraint (e.g., fasting or portion size restriction) increases the risk of binge episodes [38,39]. According to Ellison et al. [40], regular meal consumption helps prevent binge eating episodes. The psychological aspect plays a significant role in the eating habits of individuals with BN. Both excessively large and tiny portions have a considerable impact on the behaviour of all individuals, especially those with eating disorders [40]. Regular meal consumption can satisfy the excessive hunger of individuals with BN, both physiological and emotional. Eating balanced and portion-controlled meals can reduce the feeling of overeating, thus preventing compensatory behaviours [41]. Additionally, regular mealtimes throughout the day will positively impact evening consumption, as providing an adequate number of calories earlier in the day will prevent feelings of hunger later on. This is particularly important because evenings are a particularly risky time for individuals with BN, when after a full day of fasting or restriction, they may seek to compensate for their food deprivation [39,41].



**The possibility of online counseling.** Individuals suffering from BN often feel ashamed of their condition, which leads many of them to avoid seeking help from professionals [42]. Due to the complexity of the disorder, it is crucial to approach the patient from a multidimensional perspective. In the internet age, access to support groups is ubiquitous, and finding them is not a problem for most individuals. Participating in such groups seems particularly appealing, as it ensures anonymity. Considering the possibility of online support and the need for anonymity, studies have been conducted to explore the use of psychoanalytic therapy based on internet access (e-therapy). The results of these studies are promising. However, it is crucial to carefully select patients for whom e-therapy will be effective [43]. On the other hand, research by ter Huurne et al. [44] indicates the beneficial impact of online counseling on improving the health of patients with BN. In addition to online therapy, self-help programmes are available through the Internet. Studies suggest that self-help programmes are significantly more effective for individuals with BN or BED than for those suffering from anorexia [45]. The easy accessibility and wide range of materials help individuals become more familiar with the disorder, reduce feelings of shame, and lead to faster therapy results, both in-person and online [46].

**Therapy under the supervision of professionals.** Bulimia nervosa (BN) is considered a complex disorder to treat due to the low level of motivation among patients to make changes, the persistence of somatic symptoms despite ongoing treatment, and the co-occurrence of other mental disorders, such as depression [47]. The multidimensional nature of the disorder requires specialists to adopt a holistic approach to the patient. For this reason, the therapeutic team should include specialists from various fields, such as psychiatry, psychology, and dietetics [48]. An essential aspect of working with a person with BN is psychological support, which should be provided at every stage of therapy with different specialists. Individuals suffering from BN typically have lower self-esteem, a reduced sense of agency, and a poor sense of coping and understanding [19]. As a nutrition expert, the dietitian, in addition to assessing the nutritional status and analyzing the current diet, should interview the patient to evaluate their motivation for change and identify the number of mistakes made by the individual. Notably, the conversation should take place without judgment, criticism, or blaming the patient for failures. Such behaviour can decrease the patient's trust in the therapeutic team, resulting in the concealment of nutritional and clinical information, significantly delaying the treatment process [49].

**General principles of nutritional treatment in bulimia.** In addition to outpatient treatment, which addresses somatic symptoms, and psychological support, often based on cognitive-behavioural therapy, nutritional support is also crucial [20]. The role of nutritional treatment during therapy is crucial, as food is the main aspect of BN. One of the key elements of nutritional treatment is educating the patient about properly recognizing the signals of hunger and satiety [49]. Another crucial step is establishing and maintaining an optimal meal plan, which includes eliminating dietary restrictions [47]. The diet itself should be diverse, providing a wide range of nutrients. Monotonous eating will negatively affect the mental well-being of individuals with BN [50].

Meal planning should not focus on specific gram weights; a better approach is teaching nutrient exchange tables [47]. The effects of adequately conducted nutritional treatment will be evident in the form of the patient achieving and maintaining healthy body weight, normalizing eating behaviours, and restoring proper physiological functioning through improved nutritional status [51].

## SUMMARY

Eating disorders are life-threatening conditions. BN, due to its non-specific symptoms, can go unnoticed for years, both by those suffering from it and by society. Despite advancements in technology and therapeutic methods, many individuals are unable to recover from this disorder fully. Proposing a new treatment model seems crucial for improving the quality of life for both patients and their loved ones. It is important to emphasize the significance of an interdisciplinary approach to the patient. Nutritional treatment based on the principles of healthy eating and the foundations of motivational interviewing can yield beneficial therapeutic results.

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