

Unconventional compensation methods used by patients with bulimia nervosa

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ABSTRACT: Bulimia nervosa is an eating disorder that is more common among young girls and women. It bears a lot of life-long consequences for those affected by it, and in the most severe cases, it can be deadly. The aim of the study was to review the literature to help describe unconventional compensation methods used by patients with bulimia nervosa. The following methods were described: excessive and compulsive physical activity, induced vomiting, strict diets, enemas, use of pharmacy products, medication and dietary supplements, diabulimia, and drunkorexia. Atypical compensation methods used by bulimics depend on the resources the patients have at their disposal. Bulimia nervosa is still a significant and complicated health problem, and effective prevention methods have not been developed. Therefore, it is particularly important to observe people at risk of such disorders.

KEYWORDS: bulimia nervosa; unconventional compensation methods; eating disorders; nutrition

1. Introduction

Bulimia nervosa, also known as bulimia nervosa, is a serious chronic disease recognized by the International Statistical Classification of Diseases and Related Health Problems (ICD-10) as one of the eating disorders^[1]. The disorder is more common in young girls and women and can also develop in men. Statistics on the prevalence of bulimia nervosa in specific populations show a variety of values, ranging from 3% to 9%^[1,2].

The course of bulimia is based on episodes of binge eating, triggered by a strong desire to satisfy hunger, during which the sufferer consumes large amounts of food in a relatively short period of time^[1-3]. The consequences of overeating are the patient's preferred methods and compensatory behaviors aimed at nullifying the effects of absorbing large amounts of food.

Among the compensatory methods, we distinguish^[2,4,5]:

- Laxative methods → including provoking vomiting, using laxatives and diuretics, and performing enemas;
- Non-cleansing methods → exercising excessively, restricting caloric intake, practicing starvation or restrictive diets, using appetite suppressants, thyroid preparations, and products containing ephedra.

The vicious cycle of attitudes typical of bulimia is constantly driven by a heightened fear of becoming overweight or obesity^[1]. Bulimics tend to have an incorrect perception of their own bodies, often thinking they are obese people. Misconceptions and behaviors related to eating also contribute to sustaining the entire process^[2].

The development of bulimia nervosa is not a spontaneous phenomenon. Risk factors for the development of this disorder include^[1,4]:

- Incorrect perception of one's own body: judging anthropometric measurements of one's own body as larger than it really is.
- States of emotional instability, lowered self-esteem, and lack of self-acceptance.
- Biological risk factors → conditions that make a potential bulimic more susceptible to the influence of other factors.
- Personality risk factors → for example, lack of satisfaction of specific needs for an extended period of time, which can result in frustration, contributing to the occurrence of self-destructive compensatory behavior.
- Socio-cultural risk factors → perception of one's own body as part of the broader culture rather than an inherent part of human nature and anatomy.
- Family risk factors → lower material status of the family, which can induce the young person's rebellion against imposed life models and living in a certain environment.
- Alcoholism in the family and neglect by parents/guardians → these are pathologies more common in bulimics compared to other populations with mental health problems.
- Other problems in family life are related to disrupted communication, ties, emotional expression, the way contacts are resolved and the inclusion of children in marital conflicts.
- Past sexual violence → Victims of sexual violence are more likely to be unable to cope with painful memories. Bulimic behavior helps victims focus on other sensations and achieve an illusory sense of purification.
- Family risk factor → a parent suffering from bulimia nervosa may pass on behavioral patterns to offspring.

The course of bulimia nervosa, as an eating disorder, is directed by personal factors stemming from the patient's personal nature, the surrounding environment, and the resources and capabilities available to the patient. This includes the compensatory methods used, which, in many cases, may deviate from the accepted norm for bulimia nervosa.

2. Materials and methods

Publications included in the resources of online databases such as Google Scholar and PubMed were analyzed. In the process of searching for publications, multiple combinations of keywords were used, such as: eating disorders, alcohol, diabulimia, bulimia, detox, cleansing, laxatives, purging, enema, weight loss, supplements, and physical activity. The articles searched were from 2013–2023. In total, 22 scientific publications were analyzed. The purpose of this study was to review the available literature to contribute to the description of unconventional compensatory methods used by patients with bulimia nervosa. Unconventional compensatory methods were accepted as those that deviate from the traditional and academic knowledge-related standards of weight reduction (reduction diet, rational exercise, working on habits).

3. Sports bulimia

The phenomenon of sports bulimia is an attempt to counteract the effects of consuming an excessive food supply through compulsive and excessive physical activity. The mentioned variety of bulimia is included in the group of non-compulsive compensatory methods^[1,5].

Sufferers may perform one particular activity, such as trunk bending, at excessive speed and for long periods of time. A person with bulimia nervosa who engages in physical activity in an exaggerated manner may suffer what is known as musculoskeletal sports injuries. This is caused by injuries and overloads during training, as well as by taking up physical activity too quickly after a previous injury or illness^[6]. In addition, patients suffering from mental bulimia, as a collective of people, are at risk of developing local chronic injuries.

4. Provoking vomiting

Provoking vomiting is an integral part of the laxative stage in the course of bulimia nervosa. Statistics show that about 60% of bulimics provoke vomiting by inserting fingers or other foreign objects into the throat, resulting in a strong contraction of the diaphragm and abdominal muscles^[4]. The circumstances preceding and following the act of provocation are related to the individual nature of bulimia nervosa^[1,4]. The course, method of provocation, place, or time of returning the consumed products differ for many patients. For those determined to vomit, we can expect an act of provocation in public places, i.e., city parks, places of employment or education, shopping malls, or public restrooms.

5. Strict diets

Restricting caloric intake is an equally common compensatory non-purification method^[4]. Diets characterized by a low energy value, commonly referred to as starvation diets, contribute to preventing the development of excessive body weight^[3]. Low-calorie diets with altered texture, called juice detox, are gaining popularity^[7]. Juice detox involves “cleansing” the body with juices, either bought or self-made. They may be rich in fiber or other substances that exert a laxative effect.

The diet model in question does not provide the body with adequate energy and essential nutrients^[7]. The use of detoxes is closely linked to the “reward” that awaits the consumer after finalizing the diet.

For some bulimics, adherence to such strict diets can prove problematic, and sufferers may enrich their diets with dietary supplements or other pharmaceuticals to aid in the weight-loss process. For example, over-the-counter medical devices in the form of powders may be used, which work by binding a certain proportion of ingested carbohydrates and fats. People struggling with bulimia nervosa will often eat in a monotonous way, including in their menu’s products whose composition and content of individual nutrients they are particularly familiar with.

6. Enemas and rectal infusions

An enema is a procedure involving the introduction of water or other solutions into the large intestine through the rectum to remove lingering stools. The enema and less invasive rectal infusions are considered compensatory laxative methods used by patients suffering from bulimia^[3,4]. While the enema is a medical procedure, it is used by bulimics to speed up defecation and achieve an illusory sense of lightness. The method of execution and the enema solution used are individual matters, depending mainly on the resources available to the sufferer. At home, large-capacity syringes, bottles with a so-called “spout,” pears, and other items used for irrigation of the nasal cavity, or a professional kit for this procedure purchased at a pharmacy, can be used. As for the solutions used for this procedure, water or mixtures of water and soap or salt can be used. A bulimic can also purchase from a pharmacy preparation of rectal infusions used to prepare the patient for rectal and colorectal imaging. These are over-the-counter preparations that will provide the desired effect within minutes.

7. Use of pharmacy products, drugs and dietary supplements

Taking substances with diuretic, laxative, hunger-reducing, metabolism-accelerating, weight-loss-enhancing, and herbal pharmacy preparations is another method of offsetting the effects of binge eating accompanying bulimia nervosa^[3,8–10]. The aforementioned remedies can be taken by patients sporadically, but it is possible to develop an addiction to chronically used pharmaceuticals. According to the ICD-10, they have been categorized as addictions from the group of behavioral syndromes associated with physiological disorders and physical factors with the subgroup “abuse of substances that do not cause addiction,” which includes such disorders as “abuse of herbs or traditional remedies” or “abuse of vitamins,” among others^[8].

Supplements and other pharmaceutical products available in pharmacies to promote weight loss are foodstuffs included in the usual diet due to their content of bioactive ingredients that produce the expected physiological effect. The vast majority of the aforementioned agents contain ingredients such as dietary fiber, chromium, l-carnitine, green tea extract, and bitter orange extract^[11].

Juvenile bulimics and those not managing a high budget will reach for supplements such as dietary fiber. Increased intake of dietary fiber contributes to prolonging the residence time of food in the stomach; thus, including higher doses of fiber in the habitual diet enables consumption of meals with less volume^[12].

People struggling with bulimia, compared to healthy representatives of the population, are much more likely to disregard the recommendations of the manufacturer of a given agent so as to amplify the promised physiological effect and consequently avoid the consequences associated with an episode of excessive hunger. Some patients, with free access to prescription pharmaceuticals provided by a specialist, may turn to medications such as thyroid hormones or appetite suppressants dedicated to bariatric patients^[1,2].

8. Diabulimia

Diabulimia is a phenomenon classified as an eating disorder and is a harmful and potentially fatal method of weight control and reduction. It affects patients who are additionally suffering from type 1 diabetes mellitus. The disease is based on deliberately reducing insulin doses or skipping them altogether^[13,14].

It most often develops in young people, in the 15–30 age range, and more often affects women. Teenage girls are at twice the risk of developing an eating disorder, compared to healthy teenage girls. This is due to the difficulty of following a proper diet and the tendency to worry more about their weight compared to their healthy peers^[14,15]. Approximately 30%–40% of young women and adolescent girls with type 1 diabetes skip insulin doses after meals to bring about weight loss^[14].

Diabulimia develops soon after a patient is diagnosed with type 1 diabetes. Untreated diabetes leads to rapid weight loss; once the diagnosis is received and appropriate treatment is implemented, patients return to their initial weight. In addition, the mechanism of action of insulin contributes to the accumulation of body fat in the human body. Many patients have paid close attention to the aforementioned relationship and manipulate the amount of insulin applied so as to prevent an increase in body weight values^[13,15].

9. Alcohol bulimia—Alcohol as a meal replacement

There is ample evidence of the co-occurrence of alcoholism with eating disorders^[16]. It is widely believed that there is a higher prevalence of substance abuse among women struggling with eating disorders. In addition, bulimia nervosa is associated with the comorbid abuse of alcoholic beverages and other drugs^[17,18]. The group at risk is mainly college students who want to achieve/maintain an ideal physique. This is due to the fact that the largest amounts of alcohol are consumed by students in their first year of college. In addition to alcohol abuse, eating disorders are also common among students^[19].

Restricting caloric intake and/or exercising excessively in order to increase one's ability to ingest alcohol products without fear of weight gain is known as alcorexia, drunkorexia, or alcohol bulimia. Non-purging compensatory methods can be used interchangeably or concurrently with those based on laxation of the body, such as provoking vomiting or using agents that have a dilutive or diuretic effect. Bulimics' preferred compensatory methods can be implemented before or after consuming alcoholic products^[19].

10. Complications and consequences of bulimia nervosa

Bulimia nervosa is a serious threat to the health and life of the patient^[4]. The harmful sequelae of bulimia are also an individual issue; each patient may experience different complaints. Complications occurring in the standard course of mental bulimia can be divided into physiological and psychological^[4]. They are shown in **Table 1**.

Table 1. Physiological and psychological consequences of the standard course of mental bulimia^[2-4,20].

Physiological consequences of bulimia	Psychological consequences of bulimia
Diarrhea and/or constipation, paralytic bowel obstruction, abdominal distension	Depression, suicidal tendencies
Damage to the mucosa of the posterior pharyngeal wall, esophagus and stomach	Sleep and concentration disorders
Damage to teeth, decay, erosion of dental enamel, inflammation of the gums.	Disorders of consciousness
Injuries to the dorsal side of the guiding hand, Russell's sign	A feeling of inner turmoil
Respiratory disorders and shortness of breath	Disturbed perception of own body
Headaches and dizziness, constant fatigue, fainting spells	N/A
Enlargement of cervical lymph nodes	
Food deficiencies (qualitative and quantitative), electrolyte disorders.	
Salivary gland inflammation	
Mallory-Weiss syndrome	
Seizures	
Pain in the area of the facial nerve	
Constant and/or increased thirst	
Cardiac arrhythmia, faint heartbeat	

In the case of children or adolescents, the development of bulimia is likely to lead to stunted or slowed growth and sexual maturation of the body. A dangerous complication for the aforementioned age group is also the loss of bone mass^[1], which can contribute to the development of serious disease entities in later stages of life.

Bulimia nervosa is a disorder that can coexist with obesity or being overweight. Patients suffering from bulimia can be characterized by excessive body weight for many years. The main complications for

the said community of bulimics are sleep disorders resulting from sleep apnea syndrome, cardiovascular and osteoarticular diseases, type 2 diabetes, kidney stones, and hypertension^[1].

The specific complications of bulimia nervosa, or ailments that are a direct result of the compensatory method practiced, can vary in symptoms or clinical course, depending on the individual patient.

11. Low-energy diets—Complications

Bulimics who have nourished themselves using low-energy diets will face the consequences of quantitative and/or qualitative malnutrition, such as delayed gastric emptying, slowed bowel motility, constipation, and bloating. Bulimics may additionally experience irregular menstrual periods and menstrual cycle disorders^[1]. Urinary tract abnormalities are also associated with starvation; blood urea levels increase, and polyuria develops. Another effect is changes occurring in the hematopoietic system. With the help of appropriate blood tests, it will be possible to find leukopenia, iron deficiency, thrombocytopenia, or anemia.

12. Provoking vomiting and/or diarrhea—Complications

Patients who use laxative methods to level the amount of food consumed, in the form of forced vomiting or diarrhea, will contribute to the development of water and electrolyte disorders in the body. Provoking vomiting is also associated with the development of inflammation in the mouth, throat, and esophagus and the deterioration of the teeth^[1]. A characteristic effect of chronically induced vomiting is also longitudinal lacerations of the mucosa located in the distal part of the esophagus; the phenomenon in question is known as Mallory-Weiss syndrome^[2].

13. Diabulimia—Complications

Diabulimia is called the most dangerous eating disorder for a reason. Restricting or completely skipping insulin doses has devastating effects on the body of a diabetic suffering from bulimia^[15]. Complications can occur: Macrovascular: stroke, heart attack^[20]. Microvascular: renal failure or peripheral neuropathy^[20].

The effects of bulimia can be further grouped based on the period of time over which insulin was dosed incorrectly, in which case we distinguish between:

- Short-term: dehydration, muscle tissue breakdown, and fatigue^[14].
- Long-term: kidney failure, eye disease that can result in vision loss, vascular disease^[14].

The most serious complications of diabulimia include loss of vision, the need for limb amputation, and death^[15].

14. Alcohol bulimia—Complications

Excessive consumption of alcoholic products, resulting from active alcohol bulimia, contributes to the development of many health consequences. Patients replacing meals with alcohol often consume this product on an empty stomach, which results in an increase in the toxic effects of alcohol on the human body, thereby contributing to an increased risk of damage to many internal organs, including the brain^[19]. In addition, the elimination of food in favor of alcohol promotes nutritional deficiencies, dehydration, hypoglycemia, and general cachexia^[21].

Drunkorexia, like bulimia nervosa, leads to the disruption of the normal functioning of the cardiovascular system, the digestive system, and the hematopoietic system, and initiates structural changes in the musculoskeletal system^[19,21].

15. Summary

Bulimia nervosa is a serious and complicated health problem. Through excessive focus on external appearance and body weight, people struggling with gluttony are prone to undertaking a wide variety of compensatory methods designed to reduce the absorption of food consumed during an episode of excessive hunger. Compensatory behavior syndromes practiced by bulimics promote the development of health complications that can even lead to the death of the patient^[1]. Therefore, it is particularly important to observe people who are at risk of developing bulimia nervosa, especially in situations after which the sufferer tends to initiate a compensatory episode.

Author contributions

Conceptualization, MS and MG; methodology, MS; resources, KB; writing—original draft preparation, MS; writing—review and editing, ŁS; supervision, MG; project administration, MG. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

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