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# Eating Disorders and Disordered Eating: A Global Perspective

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## Abstract

The continuous progression of the prevalence of eating disorders (ED) is a cause of concern during the last decades, and epidemiologic research has shown different increases between countries. Food is as well a psychological need that presents interindividual differences such as preferences/rejections to foods, healthy/unhealthy dietary habits, and worries about the shape, which result in “body dissatisfaction.” Thus, dieting and compensatory behaviors to control weight are acquired as normal behaviors by the general population increasing the risk to suffer from ED. In addition, healthy people and other atypical disorders are strongly influenced by emotions in their eating behaviors, not only EDs.

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## Keywords

Eating disorders • Disordered eating • Atypical disorders • Emotions • Eating behaviors • Comorbidity

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## 9.1 Learning Objectives

After completing this chapter, you should be able to:

- Describe the main characteristics of eating disorders (ED).
- Describe the differences between ED and disordered eating (DE).
- Identify the risks and protective factors.
- Discuss the importance of the psychological perspective of ED and nutrition.

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## 9.2 Introduction

Eating disorders (ED) are mental disorders that are considered by the World Health Organization (WHO) as severe diseases affecting Health Systems worldwide. Although EDs are mainly developed by females during adolescence, cases have been diagnosed and described in infants, prepubescent children, adults, and elders as well. The continued progression of the prevalence of ED is a cause of concern during the last decades. In this way, data show prevalence percentages from 6.4 to 4 % in young females and 0.3 to 1 % in males (12–21 years), which indicates a gender ratio 1:9 [1]. In eastern countries such as Spain, research of prevalence rates reported a 20.8 % risk of developing ED in college females and 14.9 % in males [2], while in adolescents data show 13 % for females and 1 % in males [3].

In the USA, the prevalence of anorexia is between 0.5 and 3.7 %, whereas bulimia nervosa is 1.1–4.2 % [4]. Generally when the estimations are based upon large populations, the rate of anorexia for developed countries is 8.1 per 100,000 inhabitants per year, whereas bulimia nervosa shows prevalence rates of 1 % in adolescents and young adults [5].

To date, no protocol treatment has been considered as the most successful. For example, there is a lack of consensus among professionals about which is the best way to recover weight in anorexic patients [6, 7].

Disordered eating (DE) or eating disorders not otherwise specified (EDNOS) also exist, and these describe a wide range of irregular patterns of eating behaviors that do not warrant a diagno-

sis of a specific eating disorder. DE is not the result of a specific ED. Often, these are caused, for example, by bad nutrition, bad health habits, mental disorders (e.g., clinical depression), or by unrelated mental disorders (e.g., homesickness, mourning, breakthrough). However, recognizing DE is very important because these may involve seriously disturbing perceptions of body image and food habit problems or may include only a few signs or symptoms from classic types of ED.

Eating disorders (ED) are considered much more serious than DE, and they are defined as psychiatric disorders, as it is shown in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) diagnostic criteria. ED criteria are based on psychological, behavioral, and physiological characteristics [6]. Nevertheless, epidemiologic research reported that there is also a perturbing increase of the prevalence of DE [8], defined as eating disorders nonspecified or incomplete [4, 9].

There is a dearth of research in disordered eating among children and preadolescent girls, for the research has been focused on subsequent maturation phases such as pubertal and postpubertal years, adulthood, as well as in middle-aged and aging women [9–12].

Physical active women of all ages can develop EDs or DE because risk factors are present throughout the life span. For instance, a common risk factor is fasting or calorie restriction to participate in activities that promote thinness such as endurance sports (e.g., long distance, triathlons), sports with weight categories (e.g., martial arts, wrestling, boxing), and slim appearance sports/dances (e.g., ballet, gymnastics) [10–15]. Some affect mostly children to young adults, whereas other affect middle-aged to older women [16].

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## 9.3 Research Findings

### 9.3.1 States of Food and Food Psychology and Associated Pathologies

Nutritional requirements change throughout life-span, and research has shown that poor nourishment is a limitant for adequate development

and growth and is associated with increased risk for future chronic pathologies [17].

The “nutritional stages” refer to the different situations that occur prior to, during, and after the feeding process. Interestingly, the stages are not the same in all individuals because these are dependent on eating behavior (determined by one’s stage of life, choice of food, nourishment learning, motivation, and attitude towards the food). Eating behaviors are individual because it functions to satisfy specific physical needs; to feel better, as a socialization agent; to satisfy craving from attractive characteristics of food; etc. It seems valid to use these reasons to begin or end the eating process. Therefore, it is necessary to understand the transcendence of the physical, psychological, and social factors affecting this process during life.

### 9.3.1.1 The Food’s Psychology

Food is as well a psychological need that presents interindividual differences such as preferences/rejections to foods, healthy/unhealthy dietary habits, and worries about the shape, which result in “body dissatisfaction.” Thus, dieting and compensatory behaviors to control weight are acquired as normal behaviors by the general population increasing the risk to suffer from ED. Different psychological approaches have determined that diet selection is based on the individual factors (learning process, beliefs, and the psychological features of the individual) and not merely on the nutritional content of the food [18, 19].

At least three different models try to explain the food selection:

- Evolutionary models for food selection (learning)
- Cognitive models for food selection (beliefs)
- Psychophysiological models for food selection (psychophysiology of the individual)

*The evolutionary models.* Different research groups have reported various factors that can be affecting food preference. Thus, the food/drink selection:

- Is innate, and therefore specific flavors are preferred such as sweet [20] and salty [21] and rejected such as bitter flavors [22].

- In individuals who were habituated to sweetened water when they were babies are going to drink greater amounts compared to those who were not [23].
- Depends on the environment (observational and social learning). For example, parents’ attitudes towards food selection [24].
- Depends on the associative learning such as reward for food selection (i.e., “if you eat veggies I will feel really happy” [25]).
- Depends on the media and advertisement influence [26].

*The cognitive models.* This concept encloses different models that try to explain and predict the food selection such as risk perception, costs or benefits of a particular behavior, self-efficacy, past behavior, and social norms [27]. This provides evidence for the maintenance of positive and negative attitudes with respect to the food, which reduces the probability to eat a specific food.

*The psychophysiological models.* These models are focused in the regulation of hunger and satiation. On the one hand, “hunger” is the discomfort associated with the absence of food and is a motivation to eat [27]. On the other hand, “satiation” is an opposed concept where the consumption of food reduces the motivation to eat. There are parts of the brain such as the hypothalamus, with underlying mechanisms, that regulate the hunger–satiation state. Researchers have reported the importance of two central systems in this regulation: excitatory (serotonin) and inhibitory (catecholamine) [17, 28].

### 9.3.1.2 Feeding and Emotions (“Emotional Feeding”)

Eating behaviors are related to emotions, and some eating disorders reflect those feelings. For example, anorexic patients exhibit the “fear to eat” [29]. However, healthy people are strongly influenced by emotions in their eating behaviors as well. For example, healthy individuals reduce their food intake when they experience negative emotions [28–30].

The attachment bond is regulated by the feeding process during infancy. This basic

nourishment–feeder relationship is maintained throughout the life span—binding food to affection and hunger to dissatisfaction. This association will interfere the differentiation of nourishment and emotional needs in both clinical and general population [31, 32]. Hence, educating children in identifying and expressing emotions can prevent ED and promote healthy nutrition [32].

Silva [30] has shown that ED patients try to remove their emotions and affections showing lack of emotions, assertiveness, submissiveness, shyness, and self-futility [33]. The inability to identify and describe emotions (alexithymia) characterizes ED patients [34–40] and contributes to ED development [39, 41, 42]. Indeed, one study [40] reported that alexithymia in patients that suffered from anorexia nervosa (AN) and bulimia nervosa (BN) directly influenced their food intake. Therefore, AN patients refused to eat in dysphonic situations (sadness, anxiousness, or irritability), while BN patients increased food intake.

In spite of the recognized influence of the emotions in eating behavior, there are few studies that include the role of the emotional variables in an individual's development. Research has shown association between alexithymia and the degree of anxiety, food acceptance, weight gain, body image, and self-esteem [43–47]. ED has been described as a way to regulate self-negative emotions [37, 48–54], to further food restriction function as a way to reduce negative emotions (using the food as a negative reinforcement) [48, 51, 54].

### 9.3.1.3 Food: Culture and Socialization

Food preferences are culturally learned and socially regulated [55, 56]. Therefore, eating behavior is influenced by different factors such as race, religion, age, gender, health, social class, and ultimately by the environment.

A deeper knowledge and study of socialization processes in eating behavior can provide meaningful information to understand the uncertain causes of ED [57]. This can help develop strategies to detect factors affecting the acquisition of healthy behavior related to food intake [29] and, therefore, understand the differences between gender, races, etc. susceptible to suffer from one or other type of ED.

### 9.3.1.4 The Food Craving: Feeding, Overactivation, and Stress

*The food craving* is the intense desire to consume food, and it is stronger than a normal hunger. Scientists have proposed four theories to explain this behavior:

1. Homeostatic theories: that the intense desire to eat appears as a consequence of a previous negative reinforcement (eating behavior associated to negative feelings). The individual eats to overcome those feelings not because they are hungry [58].
2. Theories of incentive: that the delectable properties of the food (smell, taste, texture) have a motivational effect on intake behavior [51]. These theories consider that the craving influences the eating behavior by pursuing the body well-being [58].
3. Cognitive theories: that food craving can be triggered in two situations, (a) when environmental conditions impede the food intake producing frustration and leading the individual to search for food and (b) when the individual is restricting the food intake and feels successful accomplishing it [59].
4. Psychological theories: that the most recent theories postulate that food, like drugs, is addictive and has the ability to produce durable changes in structures of the nervous system related to the appetite (i.e., the insula, the caudate, the amygdala, the nucleus accumbens, the anterior cingulate, and orbitofrontal cortex) [60]. These changes in the brain are responsible for the maintenance of food craving [61].

*Food, Overactivation, and Stress:* There is growing research on the relationship between eating patterns and stress. In spite of the common notion that stress causes a reduction in food intake, several studies suggest that eating behavior is related to the psycho-emotional characteristics of the individual and the type of stress. This has been crucial to explain the implications of the food restriction, overeating, and stress in the development of ED (i.e., anorexia nervosa and bulimia nervosa) and obesity. For instance, studies showed that emotion (i.e., positive or negative valence and low or high intensity) has a stronger influence in overeaters and restrained

**Table 9.1** Evaluation criteria of AN and BN

Criteria	Indicators
Body weight	Current and historical
Eating behavior	Dieting, fasting, uncontrolled eating (binging: craving), purging, food ban (forbidden eating), anxiety at intake and after intake, distorted body image, body dissatisfaction, emotional issues influenced by intake, associated diseases (comorbidity: depression, anxiety, obsessive-compulsive disorders, sexual abuse, compulsive overeating)
Biomedical aspects	AN and BN: underweight. BMI < 17.5 in AN and normal weight BN, anthropometry, analytical

eters. This line of research has shown that the level of affective arousal is the key to trigger an episode of overeating in restrained eaters, rather than the valence of the emotion [62]. Nevertheless, anxiety and alexithymia are features present in ED patients even after recovery [63, 64], so that has been postulated as a risk factor to suffer ED [65–69].

**9.3.1.5 Eating Disorders: Personality Characteristics and Profiles**

**Symptoms in AN, BN, and EDNOS Patients**

- The principal characteristic of AN (Table 9.1) is the rejection to maintain body weight in the normal minimum values (IMC > 17.5 according to the WHO). The characteristics are drastic diets and obsessive physical exercise (restrictive AN) or in the form of binge eating and purging (compulsive/purgative AN).
- BN is characterized by frequent binge eating and compensatory behaviors, in order to control or lose weight, such as self-induced vomiting or the continuous use of laxatives or diuretics (purgative BN), or fasting and obsessive physical exercise (non-purgative BN) (see Table 9.1).
- EDNOS (eating disorder not otherwise specified), such as compulsive overeating or certain types of morbid obesity (Table 9.2).

**ED and Comorbidity**

*Personality disorders* (Table 9.3) [70–74]:

Personality is considered a habitual pattern of behavior that is manifested in different contexts and situations (i.e., cognition, impulse

**Table 9.2** EDNOS characteristics

EDNOS	Characteristics
Binge eating disorders	<p>A. Recurrent episodes of binge eating</p> <ol style="list-style-type: none"> <li>1. Intake in a short period of time of uncontrolled amounts of food</li> <li>2. Feeling of loss of control overeating during the episode (cannot stop eating)</li> </ol> <p>B. Episodes of binge associated with three or more of the following:</p> <ol style="list-style-type: none"> <li>1. Intake much faster than normal</li> <li>2. Eating until feeling uncomfortably full</li> <li>3. Ingestion of large amounts of food despite not being hungry</li> <li>4. Eating alone to conceal their voracious appetite</li> <li>5. Feeling disgusted with oneself, depressed, or great guilt after binge eating</li> </ol> <p>C. Deep distress after remembering bingeing</p> <p>D. Bingeing takes place at least two days a week for 6 months</p> <p>E. The bingeing is not associated with inadequate compensatory strategies (e.g., purging, fasting, excessive exercise)</p>
Do not meet criteria for any ED	<ol style="list-style-type: none"> <li>1. AN criteria but the individual still has regular menstruation</li> <li>2. AN criteria except significant weight loss</li> <li>3. Individual with normal weight performs inappropriate compensatory behavior after eating small amounts of food</li> <li>4. Chewing and expel, but not swallowing large amounts of food</li> <li>5. Compulsive disorder: recurrent binge eating in the absence of inappropriate compensatory behavior typical of BN</li> </ol>

**Table 9.3** Alteration: eating behavior and personality

Table or personality profile	Indicators
AN	Obsessive Introverted Socially insecure Dependent
BN	Multi-impulsivity Low capacity control
AN and BN with personality disorders	>Frequency of bingeing Anxiety–depression ≥Difficulty with social integration ≥Frequently. Attempted suicide

control, emotional stability, and interpersonal relationships), which is stable and continuous.

Personality disorders are atypical behavioral patterns that generate serious limitations in everyday life and increase distress. Unlike mental disorders, personality disorders are temporarily stable [75–77].

Despite the high rate of comorbidity among EDs and personality disorders (ranges between 51 and 84 %), the interest for this field is fairly recent [74, 78–80].

The first baseline research was conducted by Gartner [70] and consisted of 35 hospitalized patients diagnosed with AN, BN, or both AN and BN. The main results were that 57 % of the sample had at least one, AN or BN ED, plus personality disorders. Personality disorders were relatively common. The most frequent were borderline, avoidant, and self-destructive which are distributed equally amongst the various types of eating disorders. In a study done by Wonderlich [71], with a total of 46 patients, 72 % of the sample met diagnostic criteria for at least one personality disorder. For example, the “obsessive personality” was the most common feature of restrictive anorexia nervosa and “borderline and histrionic personality” for bulimia. Another study done by Grilo [80], with 136 hospitalized patients diagnosed with various EDs, 84 % had one or more personality disorders such as “borderline, avoidant, and dependent.” According to the study done by Matsunaga [74], of the 108 patients with various EDs, 51 % of the sample had personality disorders where the “borderline and antisocial” were prevalent in BN and no clear predominance in the case of AN. Furthermore, according to the work of Striegel-Moore et al. [81], with a sample of 161 veterans (98 men and 63 women) with EDs, personality disorder comorbidity was significantly greater in women (49 %) compared to men (18 %).

### **Affective Disorders: Depression and Anxiety**

*Depression and EDs.* Different studies have provided compelling evidence for the relationship

between affective disorders, especially between “EDs and depression.” From a clinical standpoint, the distinction may be difficult, since they share signs and symptoms, family trends, natural history, neuroendocrine alterations, and the response to drug treatment [82]. The prevalence of affective disorders in AN indicates that the presence of depression ranges from 20 to 100 % of the cases according to various studies [83]. Luka et al. noted that 73.3 % of children with AN suffered depressive syndromes (33 % moderate, 20 % severe, and 20 % mild depression), primarily in the “binge-purging” (88.8 %) and “restrictive” (72.2 %) subtypes. However, there has been no uniformity in quality and methodology used in data collection [84].

In some cases the depressive disorders are prior to the ED. Indeed, it was observed that the affective disorder may precede the ED from 26 to 49 % of cases [85, 86, 87]. Retrospective studies suggest that in about one third of cases major depression was already present before the onset of BN [88–90]. Other researchers found that the main features of depression in patients with AN of different ages are the problems of self-concept, where patients with restrictive AN show less depressive symptoms than the compulsive purgative patients [91–93]. In BN patients, the incidence of mood alteration ranges between 52 and 83 %. Higher rates of family history of depression were found in patients with BN (46 %) versus healthy population (13 %) [94, 95]. Hatsukami et al. found that 43 % of bulimic women had some symptoms of depressive disorder [96], and the 56 % reached a score of 20 on the Beck Depression Inventory (BDI) (cutoff: 10) [93].

*Anxiety and ED.* Anxiety is an emotional state that is particularly relevant in ED. Becker et al. [97] recruited 257 women with anxiety disorder and found ED symptoms (12 %) using the Eating Disorder Examination Questionnaire. Other study analyzed the presence of anxiety disorders in people diagnosed with ED; the data showed higher percentages (63.5 %) [98]. Godart et al. conducted a study with 271 people diagnosed with ED and 271 controls; results were that 47 % of women had anxiety prior to the ED [99].

*Anxiety, Body Dissatisfaction, and Perfectionism.* In this case, anxiety has been associated with the dissatisfaction with body image. New concepts were created like social physical anxiety, which refers to the discomfort experienced by people affected when they perceive that their physical appearance is being evaluated by others. For instance, the appearance of anxiety in eating disorders occurs primarily at social events where people interpret their body is being evaluated [49]. In this sense, Fairburn et al. pointed out that social anxiety situations may be a risk factor for developing an eating disorder [100]. Diehl et al. [101] studied the relationship between social physical anxiety (assessed with the Social Physique Anxiety Scale) and high scores in the evaluation of ED signs measured by the Eating Attitudes Test instrument (EAT) in 160 university students. Results reported high correlation between social physical anxiety and concern for weight loss, which indicates that these variables may be predictors of ED [101]. In addition, Rodriguez-Campayo [102] found a significant relationship between perfectionism and anxiety in a sample of 356 university students, which points to a significant relationship between the socially prescribed “perfectionism” (belief that others accept you if you are perfect) and high levels of anxiety ( $r=0.35$ ,  $p<0.05$ ). Therefore according to these studies, anxiety in social situations (evaluation anxiety) and social phobia are risk factors for developing an ED. Also, it seems that obsessive perfectionism associated with the desire for social acceptance is related to anxiety.

### Body Image and ED

The alteration of body image has been considered as one of the diagnostic criteria for AN in ED [4]. Given its important role in the initiation and maintenance of the disease, it is crucial in the intervention for a successful recovery [103]. However, one problem regarding this diagnosis criterion is that this is also apparent in the general population due to a significant increase of concern for physical appearance and weight.

The concept of body image consists of two components: the perception of body size and the attitude or feelings towards the body. As a result, you can define two different modes of body image dysfunction: the distortion of body size

perception and cognitive-evaluative dissatisfaction (an aspect of attitude) [104]. The concept of body image disorder consists of an abnormal perception of body size. Although there is always an expected margin of error in the feelings towards the body, the presence of systematic biases in patients with ED has led to a generalization on the concept of body image distortion. Body image is composed of perceptual components, cognitive-affective and behavior. There are primarily two ways to assess body image:

- (a) *The accuracy in estimating the body size of the person based purely on perceptual judgments.* There are two ways to evaluate: Depending on the object being estimated, measuring the width of specific body parts to obtain an index of body image or Body Perception Index (BPI), as proposed by Slade and Russell [105], which relate the perceived size of the person with the real size measured by an anthropometer [ $BPI=(\text{perceived size}/\text{real size})\times 100$ ]. Slade index can also be applied to the Image-Marking Procedure (IMP) and the Silhouettes technique [106–109].
- (b) *The attitude and feelings of an individual towards their own body,* which reflects variables of attitudes, emotion, and cognition. With this approach, using different questionnaires the Body Dissatisfaction Index was created. It measures the attitude towards weight and body shape and the attitude towards food, binge eating, and dieting. Those specific questionnaires are focused on the body image, such as the BSQ [110], and other general questionnaires, such as the EAT [111].

Numerous studies have attempted to measure the relationship between the distortion of and image perception of the body and ED. However, we are still far from knowing the relationship of this measurement as a predictor of ED.

### Family and ED

Traditionally, family has been proposed as the “cause” of ED. Conversely, the family has been proposed to “suffer” the consequences, the victims, and has been proposed as a resource for treatment as well [112]. Research about the role of family in the development and maintenance of eating disorders dates back to 1873 with the

description of AN [113]. More recent familiar variables have been studied as etiologic factors for ED [112, 113].

Early conceptualizations of AN in adolescents proposed family “psychosomatic” [114] or “anorexigenic” [114] models suggesting that specific family patterns contributed to the development, maintenance, and perpetuation of the disorder. Based almost exclusively on clinical observations, several of these theories dominated in the 1970s and 1980s, converging on a description of the anorexic family as typically fused, rigid, and dedicated to self-sacrifice and loyalty [114]. Some studies have identified certain styles of family functions with individuals with eating disorder and indicate that interactions in these families differ from those without members with eating disorders [115]. One of the most influential authors of the theory, Salvador Minuchin, developed a structural model of family [112, 114, 116], which identifies five dominant features of interactions that maintain “somatization”: (a) bonding, an extreme form of proximity and intensity in family interactions; (b) overprotection, reflected in the high degree of concern that family members have over the welfare of others; (c) stiffness, characterized by a need to maintain the status quo; (d) avoidance of conflict; and (e) involvement of the child in parental conflict (marital) through triangulation. Within the community of scientists who have studied the association between type of family functioning and the presence of eating disorders, there are controversial views. Despite inconsistent results, two major findings have emerged from the accumulation of data: (a) families with eating disorders often tend to be more dysfunctional and controlling, and (b) the quality of family dynamics plays an important role in the course and outcome of the disorder [114].

### 9.3.2 Disordered Eating

#### 9.3.2.1 EDNOS or DE: Profile and Diagnostic Criteria

*DSM-IV-TR Criteria* [4]: EDNOS or DE integrate partial or incomplete syndromes. Atypical disorders have a close resemblance to the AN and BN, and many of these cases may be severe and

persistent as complete frames, and some may even be almost identical but do not meet diagnostic criteria for full frames. In other cases, patients have had AN or BN in the past. The overestimation of figure and weight is also present in most of these patients as well as strict control overeating.

Table 9.4 describes the “emotional eater” with binge eating and compensatory behaviors developed such as bulimic patients. It incorporates different clinical forms, all occurring with obesity, and the key feature is the lack of awareness. These patients have a strong association to deficiencies in social and occupational relations,

**Table 9.4** Binge eating disorder and other atypical syndromes

EDNOS	Syndromes
Binge eating disorders	<p><i>Full syndrome:</i> (those who meet all the requirements listed in the Diagnostic International Classifications) partial or incomplete syndromes, atypical tables, residual and chronic. All can be restrictive or purgative. They can even move from one category to another. Up to 50 % of AN patients in their recovery present bulimic symptoms, a lower percentage results in BN</p> <p><i>Partial syndrome:</i> is most common in teenagers. In less than 6 months, this can evolve to full symptoms and lead to a more difficult course. They should be treated early since the prognosis is very good</p> <p><i>Syndrome ongoing:</i> evolution is partial in quick weight loss</p> <p><i>Among atypical syndromes:</i> stand alexithymic AN or psychosomatic AN, occurring without anorexic ideation sometimes after a typical disorder (or history)</p>
Other atypical disorders	<p><i>Bigorexia</i> or misuse of the gyms</p> <p><i>Orthorexia</i> or obsession on healthy and medicinal food</p> <p>Night eaters</p> <p><i>Waste syndrome:</i> up to one third of the AN and BN do not recover completely. Residual food symptoms, being defensive about food remains. This does not necessarily limit their quality of life</p> <p><i>Chronic syndrome:</i> a small percentage of those who start with AN or BN in adolescence will become chronic and resistant to treatment. Increasing after 18 years, after relapse or late appearances</p>



excessive preoccupation with shape and weight, general psychopathology, significant amount of time spent on diets, emotional problems, and history of depression.

### 9.3.2.2 Disordered Eating: Disordered Lifestyle

DE is actually a way of projecting disorderly situations of daily life such as lack of control at certain times, which can lead to lack of control on the intake of food. Our objective should not be the patient gaining or losing weight; instead it should be normalizing their relationship with food.

In DE, a necessity to resolve daily problems and lifestyles that have not been resolved may be done through self-control with food. When self-control is lost, what follows is a binge phase that also extends to the “physical appearance.” Therefore, in eating disorders there is a real alteration in large parts of daily life. This explains why patients only show isolated symptoms, even in extreme cases. Thus, the behaviors associated with “eating disorders” may include compulsive dieting of specific foods, skipping meals, or avoiding food groups in order to lose weight. Individuals who eventually develop ED are more likely to have had abnormal eating patterns or habits, such as skipping meals or eating excessive amounts of unhealthy foods, even before the age of 12 [117].

### 9.3.2.3 DE or Lack of Control: Binge Eating and DE

Binging can be commonly present in patients with bulimia nervosa. Thus, in the case of EDNOS, we are talking about an atypical bulimic disorder, where the lack of control is the foundation of the disorder. However, it can also present other disorders. In addition to binging, purging, or vomiting, alcohol abuse, substance abuse, self-mutilation, and sexual promiscuity also exist [118].

Binging is related to uncontrolled behavior with respect to intake. Sometimes this uncontrolled behavior may arise from a difficulty of impulsive control to eat or because the individual experiences anxiety to eat [118].

Binging can also be considered an addictive condition, conditioned by emotional states of mind. In certain circumstances (loneliness, stress,

sadness, etc.) or when the patient comes in contact with certain food-related stimuli (especially smell, vision, and taste), binging “automatically” forages without thinking. Indeed, the susceptibility to these stimuli can increase during the start of a weight loss diet plan. This explains why binging is more likely to occur after a period of fasting or dieting [119].

There are several theories explaining this uncontrolled intake:

- *Model of binge eating*: the internalization of body ideals and body dissatisfaction with binge eating through food restriction to obtain the ideal body [120]. Binging is the result of physical and psychological susceptibility following periods of food restriction. When on a diet the body tries to defend itself from weight loss (present or future) producing an increase in hunger and desire [121].
- *Affect regulation model*: Other authors have studied the relationship between binge eating and negative emotional states. It is common for patients to binge eat to reduce negative affect (NA). These patients have a very low state of mind, dissatisfaction, and emptiness without feeling hungry [122–124]. Patients exhibit “attentional bias” (when a person focuses attention on a specific stimulus) towards self-esteem and threat avoiding food [125, 126].
- *Emotional reinforcement model*: This model emphasizes the role of reinforcement on the motivation of intake. although the relationship between neuroendocrine mediators, stress, and food is still being studied [127].

### 9.3.2.4 Other DE: Bigorexia and Orthorexia

Currently, besides the EDNOS there are other sets of conditions most closely linked to specific areas such as physical activity (PA) or healthy eating. These have not yet been classified as ED (they are not included in the DSM) and are actually appearing more frequently in the general population.

*Bigorexia* (see Table 9.4): Bigorexia is more common among athletes or people who go to the gym on a daily basis and who are obsessed with

exercise. It is “a muscle dysmorphic disorder”, the attempt of a person to have a completely muscular, developed, and bulky body for fear of appearing weak. Symptoms include constantly looking in the mirror, feeling thin even when not, weighing several times a day, and spending more than 6 h a day exercising. Pope et al. [128] discovered a disorder related to body image, while studying the secondary effects of steroids use in bodybuilders, who despite having a body with highly developed muscles, expressed an intense fear of having a small and weak body. The self-perception of their bodies appeared distorted, with a high tendency to “underestimate the shape” or perceived it to be incredibly less bulky than it really was. This intense fear of appearing small or having small volume, together with body image distortion, caused these people to spend long periods in the gym, following protein diets and a high percentage use of anabolic hormones [129].

*Orthorexia* (see Table 9.4): It is the “appetite for the right/healthy food,” an obsession for healthy food that is considered pathological. Symptoms include dedicating more than 3 h to think about food and taking a survival kit when traveling when the food does not meet their dietary requirements.

### 9.3.3 New Models of Psychological Intervention

Traditionally, ED has been addressed from multidisciplinary approaches and is seen as a biopsychosocial disease (see Chap. 10). Until now, we can only say that few protocols have proven to be effective in the treatment of the disorder:

- Psychoanalytic models
- Cognitive-behavioral therapies
- Family therapies
- Medical treatments and hospitalization

All of these approaches are focused on three steps. The first instance centered on the weight recovery and body sizes. The second focuses on maintaining these gains. Finally, the third is about the reintegration of patients in their family and social network.

In some studies, work has begun in the development of skills to improve the patients’ adaptation to the environment, social skills, and interpersonal communication such as assertiveness. However, studies on assertiveness in ED are almost anecdotic. On the other hand, there are numerous references in the specialized literature regarding the lack of self-assertion in patients with ED. AN and BN perceive themselves to be controlled by their family and society; however, they do not act assertively with their controllers [82].

Psychological intervention models have prioritized the study and development of numerous strategies to correct deficiencies and disorders [130]. For example, one strategy used, when we find ourselves in a negative emotional state such as sadness, is finding a tool or a mode of intervention (from a psychological point of view) that minimizes the impact of sadness on the individual’s life. It is known that many of the techniques and psychological intervention strategies generate positive emotional states [131]. For example, *relaxation techniques* are effective in the treatment of anxiety disorders because they produce either direct or indirect states of consciousness suitable for contentedness. However, it is important to note that experiencing negative emotions is something inevitable and useful from an evolutionary standpoint, but such emotions are at the core of many psychological disorders [132, 133]. *The visualization, simulation, and role-playing* of pleasurable situations are strategies that motivate patients to focus on the present moment and to take positive awareness of their selves.

Cognitive therapies focus on learned optimism, explaining that it is not the negative events themselves that lead to depression [32, 134], so researchers have tried to replace these explanations by other unstable and specific explanations. In the words of Vazquez [130], their efficacy is supposed to lie in the attempt to cancel the effect of negative meanings, but this also does not mean that it needs to be replaced with positive ones.

Currently, we found different therapeutic approaches that are more focused on trying to restore the state of psychological and physical health of the patient in self-managing strategies

and/or external strategies. Some of these models try to work on enabling and equipping the individual with self-care strategies to better address emotional, social, and familial conflicts. This helps in restoring physical and emotional balance (Empowerment Model) with the objective to create patient independence and ability to take care of themselves [135].

Other models have focused on solving the problem, looking at it from every angle and trying to find “resilience” in the patients. Resilient people are those able to bounce back up over and over again in situations of crisis or conflict. From this point of view, a resilient person is able to generate positive emotions [30] or psychological health at critical moments. They are able to analyze situations from an objective point of view and take advantage of it.

Another approach in the treatment of ED and family is the development of emotional intelligence and the use of communication tools for emotional management, as well as improving social skills in patients and families of patients with ED.

Some of the newest models that focus on emotional regulation form intervention strategies based on the concept of emotional intelligence [136]. Emotional intelligence (EI) may be defined as the capacity for recognizing our own feelings and those of others and ability to handle them. In Goleman’s book, “Emotional Intelligence” first published in 1995, he estimated that EI can be organized around five capabilities: auto-body awareness, empathy, listening, self-motivation, and social skills. Working with ED from this approach assumes intervening in these five areas. In this sense, the foci are both within the self and emotional awareness through the detection of their own emotions, having empathy, understanding the ability to take the place of others and, therefore, understanding them (understanding and interpersonal communication), intrinsic motivation and social skills, or interaction with the environment [137].

### 9.3.3.1 Coaching with ED/DE Patients

Before proceeding to develop the basis for intervention of this model, it is important to describe the concept. The concept of coaching refers to

the action of “trainer or guide.” A coach can be considered a person who guides or trains another to learn on their own and who has the ability to work independently in their learning and in managing difficult situations [9].

Among the actions expected of a coach, one role is supporting and guiding the search for solutions. Under certain conditions such as ED, we have seen that one of the most damaged elements in the personal sphere is self-esteem. The coach helps in finding the patients’ own strategies to improve self-concept and to develop the capacity for empathy (one of the most damaged skills for example in AN, in addition to alexithymia). Therefore, coaching that includes asking questions to guide the self-learning and personal skills development (i.e., interpersonal communication skills, empathy, and listening) can be a good tool to intervene ED. It is especially useful when one of the crucial elements that is affected is communication in the “household” [9], where working on the development of family communication skills becomes a primary goal of treatment. The focus is on the following areas:

Work to develop interpersonal communication skills.

- Initial interview—baseline on communication skills, “learning gaps,” and areas for improvement:
  - Empathy
  - Active listening
  - Dexterity in conversation with others (social abilities)
- Analysis and evaluation of predominant communication styles in the individual “passive–aggressive communication styles”
- Analysis and evaluation of family communication patterns: comparison with patient and refocus
- Effective communication styles: in social interactions and assertive styles
- Communication tools—affective interpersonal skills and training:
  - Positive feedback
  - Empathy
  - Listening
  - Motivation

- Analysis of misleading communication and refocus model
- Coaching process—training:
  - Make and receive criticism.
  - Coping with situations
  - Coping with ED
  - Decision-making
  - Auto-learning and auto-tools
  - Training for the acceptance of physical and mental health

The coach centers the intervention on empowering the sick person to be able to successfully tackle their health with success and responsibility.

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## 9.4 Contemporary Understanding of the Issues

Although the studies and research conducted so far indicate a breakthrough in the investigation of ED, we can still find a need for further research in the general population. As we have indicated in the last section of this chapter, there are currently emerging new forms of disordered behavior in relation to nutrition and eating on one side (the case of orthorexia and other obsessive feeding patterns) and related patterns as in the case of bigorexia and other forms of behavior where this activity is done compulsively. There are also increasing cases of ED associated with a distorted body image which also deserve a place in clinical research.

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## 9.5 Future Directions

Despite the current limited research on DE behavior, patterns show increases in prevalence and knowledge about its epidemiology. Future research lines should be addressed to deepen the ways of interdisciplinary intervention, where there is a high cooperation between different professionals, various areas of study, and a plethora of research on these pathologies.

Furthermore, there is increasing scientific evidence that shows the relationship between emotional variables and the development of ED

and the role of stress either caused by everyday life events, traumatic situations, or high psychosocial impact.

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## 9.6 Concluding Remarks

The key points on which we have worked in this chapter are:

- Psychosocial variables related to the origin, development, and maintenance of ED such as emotional patterns, patterns of eating behavior, the role of stress, the relationship between emotional variables and states of mind, the role of family, and body image
- The different diagnostic classifications according to American and European scales of these disorders.
- The new pathologies in relation to food such as orthorexia and in relation to physical activity and body image such as bigorexia
- Finally, new models of psychological intervention based on aspects of communication and emotional intelligence

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