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Feeding and Eating Disorders

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Abstract

Eating disorders, which are well known as a substantial mental health problem in society, have been reclassified as feeding and eating disorders in DSM-5 and also in the 11th revision of ICD. The new classification includes binge eating disorder and avoidant-restrictive food intake disorder (ARFID), in addition to anorexia and bulimia nervosa. They are considered serious disorders, with high morbidity and mortality risks, that affect the young community in particular. Current research shows increases in all genders and age groups. Various genetic and biologic factors, an insecure personality type, impulsive traits, dysfunctional emotion regulation, and society's ideal of slimness have been found to play a role in the development of these disorders. A dual approach with focus on the symptom and the underlying problems is needed for all types of eating disorders throughout the psychotherapeutic interventions. Assessing comorbid psychiatric and medical symptoms is extremely important. Further research and new directions of treatment are needed with regard to the expanded classifications.

Keywords: eating disorders, anorexia nervosa, bulimia nervosa, binge eating disorder, treatment

1. Introduction

Eating disorders, which are well known as a substantial mental health problem in society, can come across all ages, but anorexia nervosa and avoidant-restrictive food intake are more common in childhood and adolescents, while bulimia nervosa and binge eating disorder are less prevalent in pediatric patients, but also with significant functional impairment [1].

2. Epidemiology

Recently, a systematic review analyzed the lifetime prevalence of eating disorders and found for anorexia nervosa a prevalence of 1.4% for women and 0.2% for men. Bulimia nervosa had higher prevalence scores 1.9% for women and 0.6% for men. Binge eating disorder had the highest prevalence percentage with 2.8% in women and 1% in men. The prevalence for avoidant-restrictive food intake disorder was investigated and was found to be 0.3% [2, 3]. All these results must be cautiously taken into consideration because the real community incidence of eating and feeding disorders is unknown. Other studies found an increasing number of cases diagnosed with bulimia nervosa or binge eating disorder [4, 5]. In the young women's population, anorexia nervosa seems to be the most predominant form of feeding and eating disorders, while binge eating disorder is more common

in men [6]. Overall, studies show a higher prevalence of eating disorders among females and the young population [7].

3. Causes

Genetic predisposition is associated with the diagnosis of anorexia nervosa. Studies demonstrated that it is also a vulnerability inherited for anxiety and obsessiveness, by examining the family members of patients suffering from eating disorders and identifying anxiety disorders, obsessive compulsive disorder and autistic spectrum disorders diagnosed in the family members. The families with eating disorders have higher levels of academic achievement, traits of perfectionism and sensitivity, being above the average [8]. On the other hand, some studies explained the onset of anorexic episodes in the context of nonspecific triggers such as puberty, changes of schools or home, exams, conflicts with friends, family members, being bullied and bereavement. The anorexic behavior becomes a mechanism that manifest's in discomfort situations rather than confronting them [9]. A report showed that bulimia and binge eating disorders are being influenced by environmental factors, but theses play also a part in the onset and evolution of anorexia nervosa. In the same study it was mentioned that 17–18 years old was the peak age onset for bulimia and binge eating disorders [10].

4. Symptoms

Typical symptoms describing patients with anorexia nervosa are an obsessive fear of gaining weight, body dysmorphia, voluntary and deliberate purging and over exercising. Purging is a voluntary action, characterized by putting the fingers down the throat to induce vomiting. Because of this repeated action on the knuckles of the right hand appear calluses, known as Russell sign, caused by the repeated pressure from the teeth during purging. In time purging becomes a reflex and patients can vomit without effort, quickly, within seconds. Due to the gastric acidity after vomiting, teeth may become denuded of enamel and the parotid gland becomes enlarged. As a consequence of many hours of physical exercise joint problems can be precipitated and, on the long term, osteoporosis can develop caused by malnutrition and endocrine abnormalities [11, 12].

Specific behaviors usually used by patients in order to lose more weight are represented by avoidance of calorie intake such as a restrictive diet, consuming vegan food, hiding or disposing the food that is served by offering to pets or friends, chewing gum or smoking just to feel the mouth full with something, trying to mimic the feel of fullness by drinking water or diet drinks, always calculating the amount of calories intake by reading all food labels or avoiding medication that can lead to weight gain. Another way to maintain or reduce weight is to overcome the calorie intake by inducing vomiting, using laxatives in excessive doses, exposing the body to cold just for burning more calories, doing exhausting physical exercises, administering pain killers to release pain in order to be able to over exercise, using and buying substances for losing weight. Also, compulsive behaviors of rechecking ones weight, examining oneself in mirrors for hours, seeking to feel their bones through skin, comparing their body to magazines or online pictures can be present [13].

To define compulsive exercises we must assume any form of physical activity that cannot be stopped or cut down even in the presence of detrimental effects on health status [14, 15]. For persons who associate excessive physical exercises,

this behavior usually started for healthy issues, prior to the presence of eating symptoms, and patients describe themselves as having greater levels of physical activity than their friends during childhood, or even being athletes during that period [16, 17]. For normal subjects, usually these activities come unplanned and are done in a spontaneous manner, with joy in participating, but for patients with eating disorders activities become carefully planned and self-conscious. A possible explanation of this behavior comes from ancient times, as an evolutionary adaptation; despite weight loss individuals are able to search food in wider areas [18]. Also, a strong emotional involvement is attached to physical activities [19, 20], and it is considered to be the last symptom that resolves [21]. Examples of such exercises are: swimming, running, cycling, all of this done in privacy and solitude; go up and down the stairs more than it is required for a task, getting of public transport for walking long distances, standing on feet for longer than it is required or pacing all the time. Studies connect the over activity that is still present after discharge with a more chronic evolution, earlier relapse rates and longer periods of time spent in hospital admissions [22, 23].

Gastrointestinal functional symptoms can also associate in the course evolution of an eating disorder. Patients with anorexia nervosa reported postprandial fullness, abdominal distension and unspecific abdominal pain. On the other hand, for bulimia nervosa more frequent were reported bloating, flatulence and constipation as gastrointestinal functional symptoms [24]. If these symptoms are severe enough and require more investigations, for patients that are malnourished, invasive investigations of the gut such as colonoscopy or upper gastrointestinal endoscopy, could lead to important risks. Patients diagnosed with anorexia nervosa have the gut much thinner than well-nourished patients, and so the risk of tear or perforation is much higher, therefore, less invasive investigation are considered to be safer, such as CT scanning or barium passage [25].

Osteopenia represents a consequence of bone loss after a long period of low weight and sex steroid suppression. This effect may become irreversible in patients with severe anorexia nervosa, and implies a high risk for bone fracture even in young old patients [26].

5. Examination

One of the most important phases in physical examination consists in determining the body mass index, which expresses weight in kilograms reported to height in squared meters (height is greater early in the morning). It is a simple formula to measure the nutritional risk but always needs to be interpreted in the clinical context. Sometimes based on this measurement, the case management plan can be influenced in determining which patient needs the most to be admitted and which can be treated in the community [27]. A so-called normal BMI is considered between the interval of 20–25 kg/m², but if this parameter keeps falling as a consequence of inappropriate restriction of food intake, this has to be taken into consideration. Measuring the physical resilience of the patient with a simple screening test can be done by telling the patient to sit up, squat and stand, or by using handgrip for measuring strength [28]. Another important step is measuring pulse, blood pressure, and ECG for investigating the risk of prolonged QTc interval (over 450 ms) that can indicate electrolyte disturbances (hypokalemia, hypomagnesaemia, and hypocalcemia), heart disease (myocardial ischemia and cardiomyopathies), and improper use of drugs such as antipsychotics, antidepressants, antihistamines, antibiotics, and antiarrhythmics. Commonly anorexic patients present cardiovascular instability as bradycardia, showing a pulse under 50 bpm, or resting tachycardia

with a pulse over 100 bpm suggesting infection or dehydration [29]. Also, basic screening is necessary. A full blood cell count has to be done, biochemical assays such as transaminase to evaluate liver function, creatinine and urea for determining renal function. Electrolytes abnormalities are common and need to be measured to exclude hyponatremia after an excessive water intake, hypokalemia in the context of excessive purging, or hypocalcaemia, hypomagnesaemia that can indicate the improper use of laxatives. Thyroid function should be checked together with plasma ferritin, folate, and B12 vitamin [30].

Body temperature frequently drops under 36°C in anorexic patients, who voluntarily induce hypothermia in order to start shivering, consume energy and lose some more weight. Fever in a patient with low BMI is always significant and can indicate infection, with negative consequences because even minor episodes of sepsis can have a fatal outcome. Other signs present could be pale conjunctives, dry tongue and teguments, muscular weakness, peripheral edema in the context of low-level albumin, hand calluses after self-induced vomiting. It is not uncommon that patients present constipation, as a paradox effect of withdrawing the laxatives that were used for long periods of time in very high doses [31].

6. Making a diagnosis of eating disorder

The ICD-11 restructured the chapter of feeding and eating disorders guided by the principles of more clinical utility and relevance around the world, after 25 years of research and evidence based knowledge. The disorders included in this chapter are not better explained by other health problems, developmentally conditions or cultural context. Moreover, two previous distinct conditions were united in one single block named feeding and eating disorders that combines abnormal eating patterns associated with fear of gaining weight, body image and feeding behaviors that imply limited food intake, eating non-edible substances, or voluntary regurgitation of foods that have been eaten. We could say that this grouping decision enhances the clinical importance of feeding problems during infancy and childhood [32].

The ICD-11 guidelines for Pica have not been changed in a substantial way from the previous version of ICD. Pica is still characterized by a frequent and regular ingestion of non-nutritive substances, like different objects or materials, to a persistent and severe degree that requires special clinical attention, in a subject capable to distinguish between substances that can and cannot be eaten. This type of behavior has severe risks on the health and functioning system of an individual [31, 32].

For the rumination and regurgitation disorder the ICD-11 guidelines are almost the same as in the ICD-10. The main symptoms of the disorder need to be frequent as several times per week and present over a sustained period of at least several weeks. Characteristic symptoms that appear in an individual that reached the age of 2 are represented by regurgitation of food that was previously swallowed or the food that was brought up in the mouth could be re-chewed, re-swallowed or spat out [33].

A new ICD-11 diagnosis is avoidant-restrictive food intake disorder, characterized by a very low and insufficient amount or variety of food in order to supply an adequate level of energy or demands. This course of restriction causes weight loss and nutritional deficiencies but without a preoccupation of body weight and shape [33].

For Anorexia nervosa, the major features of the disorder remained unchanged in the ICD-11, such as a low body weight for an individual's height, age and developmental phase without a better explanation of another condition. The low weight

is defined by a body mass index under 18.5 kg/m^2 or less than the fifth percentile in children or adolescents, but these should be used as general aspects of reference permitting in some circumstance to diagnose anorexia nervosa at higher levels of weight. A detailed specification was added to anorexia as a severity qualifier indicating that the level of underweight status can influence the prognosis by other health complications determining a high mortality risk or a poorer outcome. This classification consists in significantly low body weight; defined as a BMI between 18.5 and 14.0 kg/m^2 for adult subjects and between the fifth percentile and the 0.3 percentile in children. The next severity step is named as dangerously low body weight and requires a BMI below 14.0 kg/m^2 for adults and for children less than 0.3 percentile. Another important aspect in the ICD-11 is the qualifier anorexia nervosa in recovery with normal body weight, providing a solution for those patients that have regained weight but still need special attention and care. Despite the DSM-5 classifications, ICD-11 emphasizes the behavior patterns (restricting pattern and binge-purge pattern) that are weight related and used by patients in order to lose more weight. In both classification systems, physical symptoms such as amenorrhea, osteopenia are frequent consequences of food restriction, they still occur but they are no longer considered as one of the main criteria for diagnosis. Also, the ICD-11 and DSM-5 do not include as mandatory the presence of a reported fear about gaining weight, considering this symptom as a more culturally based belief. On the other hand, there is a need of modified normal behavior in order to prevent loss weight so that anorexia nervosa diagnosis can be confirmed [32–34].

Bulimia nervosa in the ICD-11 remains characterized by binge eating episodes and compensatory behaviors to prevent weight gain but, different from anorexia nervosa, the patient is not underweight even if they are preoccupied by body shape image. A change in the frequency of the binge eating episodes was made by reducing them to once a week or more over a period of at least 1 month. Also, the time criteria have been shortened admitting the importance of receiving clinical care without any further delay. In parallel, for DSM-5 the time criteria include a period of at least 3 months. A binge eating episode represents a distinct period when an individual has no control over the eating or the amount of food intake. The common type of bulimia is the one without purging but with severe fasting or physical exercises and can be difficult to differentiate from binge eating disorder based solely on the regular compensatory behaviors [35].

A new diagnosis was added to ICD-11, named binge eating disorder, separated by the other eating disorders as a disturbance characterized by recurrent binge eating episodes accompanied by negative emotions and severe distress, without compensatory behaviors to prevent weight gain. This category was previously described in the Appendix of DSM-IV and now forms a new diagnosis in the DSM-5. To assume a correct diagnosis according to DSM-5, 3 out of 5 additional features have to be present, like: eating faster than normal; eating even if the patient does not feel hungry; eating until he feels uncomfortably full; the food intake is done in solitude; and negative emotions such as guilt, disgust or depression can follow the overeating. An important aspect is that ICD-11 guidelines do not require for the binge eating episodes an objective evaluation of the amount of food eaten but suggests the importance of the subjective experience of losing control over eating rather the quantity ingested [36].

While both bulimia nervosa and binge eating disorder associate marked distress in the ICD-11 criteria, the DSM-5 requires marked distress just for binge eating disorder and not in the case of bulimia nervosa. A possible explanation for these differences between the two diagnostic categories would be the presence of the weight-compensatory behaviors that we can assume to reflect severe distress. In ICD-11 disturbances in body shape are required for anorexia and bulimia nervosa;

self-body image concerns can be present in the binge eating disorder or avoidant-restrictive food intake disorder but are not necessary criteria. All in all, the new changes have the purpose to broaden the diagnostic process and facilitate clinical practice with the disadvantage of over diagnosing but also with respect to the course of life evolution [37].

If the criteria of behavior frequency are not fulfilled or other symptoms are considered sub-threshold, those eating disorders are classified in the DSM-5 as unspecified feeding and eating disorders, and in the ICD-11 as poorly specified other feeding and eating disorder [34, 37].

7. Differential diagnosis

Eating disorders must be medically assessed in order to establish if present physical conditions are consequences of the mental illness or different somatic health problems. This strategy allows developing an integrated management plan, because both problems need proper evaluation and treatment and can impact recovery or the quality of life [38].

The most common symptoms in anorexia nervosa are the fear of gaining weight and the excessive preoccupation of being overweight or fat. Despite the fact that they are malnourished, patients try to lose even more weight. In contrast, many gastrointestinal illnesses have as a central symptom the weight loss and in this situation the patient is worried about the loss and tries to regain weight. The main two illnesses with this symptomatology are coeliac disease and inflammatory bowel disease. More family members can be affected by these diseases, but such family predisposition can be present for eating disorders too [39].

On the other hand, functional gastrointestinal disorders can mimic an eating disorder, but usually they do not associate weight loss and have a long past evolution in the patient's history. Such frequently reported diseases are the irritable bowel syndrome and the non-ulcer dyspepsia, also common in patients with diagnosis of eating disorder. Food intolerance and allergies can simultaneously be present in a patient with eating disorders, but in this scenario it is more difficult to precisely discriminate between the two conditions [40]. The loss of appetite is a very common symptom, but nonspecific, in both mental and physical disorders. It can associate with weight loss and needs more investigating. In eating disorders, patients do not lose their appetite, the restriction from food intake has a voluntary component, that is not present in organic disorders, where the loss of appetite is without effort and involuntary. On the other hand, compulsive eating with an increased level of appetite can be present in Prader-Willi syndrome, craniopharyngioma, tumors of the hypothalamus or recovery from acute illnesses. This symptom is characteristic in bulimia nervosa or the binge/purge subtype of anorexia [41]. Dysphagia is considered an alarming symptom in old age patients, and needs endoscopy or barium passage, malignancy strictures or achalasia are usually suspected. Other gastrointestinal symptoms that are commonly present include odynophagia, nausea, vomiting, hematemesis or melena, abdominal pain, constipation, diarrhea. Odynophagia described as pain when swallowing can be present in a reflux esophagitis or esophageal candida. Vomiting is a very unspecific symptom usually associated with nausea that can have different causes such as inflammatory bowel disease, side effects of different drugs, a high intracranial pressure, pyloric stenosis, gastro-paresis, but in these circumstances a voluntary control is not present as in eating disorders and it is not hidden [42]. Hematemesis or melena can represent a medical emergency, but frequently represent a consequence of purging and vomiting, with the development of Mallory Weiss tears. For the abdominal pain the doctor should establish

the level of intensity, quality and localization of the pain in order to differentiate a peptic ulcer, gallstones, pancreatitis or appendicitis. Constipation, diarrhea, and rectal bleeding are symptoms that need to be integrated with other factors and the most important aspect is the change in bowel habit that can imply Crohn's disease or ulcerative colitis [43].

The age of onset can be a very important clue. Usually, organic conditions, in special malignant illnesses that can manifest with weight loss, become more frequent with old age. If symptoms appear over 50 years, appropriate investigations are required. Moreover, the onset of eating disorders is identified in the teenage years or early adulthood [43].

In order to establish a diagnosis of an eating disorder the patient should be physically examined, the mental state evaluation should be done, all of these supported by a detailed medical history, family history and social context. All symptoms must be placed in a chronological order.

8. Management of eating disorders

International guidelines recommend psycho-behavior therapy for all eating disorders, which can be applied in a form of outpatient care, when the treatment is accepted and the patient accepts to cooperate, with major beneficial effects, being more cost-effective, reducing hospitalizations, making patients feel more secure in their own environment, maintaining social contact with friends and family members, being able to perform other pleasant activities and making the rehabilitation phase much easier. Patients with a BMI over 16 kg/m^2 , with bulimia nervosa or binge purge syndrome are usually treated in outpatient or day care units because the risks are less serious on physical harm and this form of outpatient context has been proved to be highly effective [44]. On the other hand, for more severe forms, when patients' symptoms are not improving with home treatment or the patients' physical status is unstable (weight is rapidly diminishing, the BMI is under 14 kg/m^2 , low pulse, blood pressure, body temperature decreasing or fever being present, difficulty in performing the basic test of physical strength) more restrictive measures must be taken in a partial or day admission, or even a compulsory treatment would be necessary in order for the patient to improve physical and mentally but also, to limit potential harm behavior [45]. Anorexic patients in general do not want to die, but it is needed to understand the psychological drive of an anorexic patient who has an extreme fear of gaining weight, who is unable to rationally see that their physical state has become critical, and if the weight will continue to drop the result will lead to death [44].

It is highly recommended for these patients to be treated by a multi-disciplinary team with a minimum of a psychological therapist and a family doctor, but in hospital care additional support is required as a registered dietician, specialist physician, psychiatrist, nurses, physiotherapist, occupational therapist and social worker [46]. Nurses and other medical staff represent a key element in the management treatment approach by limiting mobility, imposing bed rest, monitoring fluid balance and physical symptoms (pulse, blood pressure, temperature), supervising mealtimes (observation for at least 1 h after eating), showers, toilets (patients being alone can consider a perfect opportunity to engage in behaviors such as purging, excessive physical exercises or water loading for a false weight gain). Even with the risk of some saying these rules are unethical; protocols like this can avoid numerous unwanted behaviors done by patients in the purpose of resisting the weight gain and destroying the process of recovery. In the context of bed resting for an easier and closer observation it is important to start prophylaxis for deep vein thrombosis with

low molecular weight heparin [47]. Also, clothes need to be checked because they can represent means for falsifying weight or transport regurgitated food. Dieticians are also important for the safe management of patients with eating disorders. They need to be consulted for the risk of re-feeding syndrome, must establish a meal plan for proper nutritional requirements, to include all nutrients, carbohydrates, proteins, fats, vitamins and all kinds of minerals, to use supplements if the case imposes, and monitor weight gaining in a correct pace, and also, on the long term, to provide proper education for a balanced nutrition plan and teach patients how to prepare their meals and eat adequately in social situations [46].

The management of over activity can be treated firstly by providing psychoeducation about the advantages and disadvantages of this behavior and to discourage exercise. Also, relaxation and distractions techniques can be helpful, the use of wheelchairs to reduce the level of energy spent, administer Olanzapine with a good effect on the compulsive behavior, providing a calm and warm environment, with a permanent supervision from medical staff [48].

Treatment goals address numerous aspects such as nutritional, physical, social and mental health comorbidities. Some studies were made on healthy subjects, who voluntarily agreed to be starved, and the effect of this demonstrated that even in normal subjects thought processes were slowed, executive functions were impaired, with decision making disturbances, and personality traits accentuated in a manner that persons were more paranoid, depressed or became psychotic. The majority of these symptoms were reversed by re-feeding treatment in normal individuals and similarities were observed for anorexic patients, who had an improvement in thinking, mood stability and improved the engagement level for psychotherapy [49].

For malnourished patients re-feeding may represent the only solution for surviving. It has to be initiated promptly with benefits on the physical strength, cerebral function. It restores the reduced size of internal organs, heart, gut and their functions, offers a better functioning of the immune system, patients being less susceptible for infections. All of these outcomes appear after a slow process, because the body needs to readapt to the increased availability of calories and nutrients [50]. If the patients have a very low BMI, under 16 kg/m^2 , or had a rapid loss weight within the last 3–6 months of over 15% of the body weight, had little nutritional intake for more than 10 days or have low levels of potassium, phosphate, magnesium prior to the re-feeding, they are at risk of developing a re-feeding syndrome, according to the NICE guidelines [51]. The re-feeding syndrome can be defined as a consequence of trying to re-establish the normal weight of a very malnourished patient. During this phase, the maximal risk is within 72 h and implies potentially fatal shifts in fluids and electrolytes. The characteristic biochemical abnormality is the hypophosphatemia, but hypokalemia and hypomagnesaemia can also occur. NICE recommends starting re-feeding process at 5 kcal/kg/24 h for those with severe anorexia nervosa, through a nasogastric re-feeding tube and progressively increasing the rate of re-feeding to the target calorie intake over the next 4–7 days. Other studies showed that higher initial re-feeding rates can be applied such as 15 or 20 kcal/kg/24 h , with or without the association of re-feeding syndrome [52].

In order to avoid this kind of situations the patient has to be admitted in special medical units with experience in re-feeding syndrome, to monitor the blood chemistry twice a day, start with caution and increase quickly if the patient tolerates well. A particular aspect is to start giving thiamine before feeding starts, and to continue with it at least 10 days in order to overcome the development of Wernicke's encephalopathy or Korsakoff syndrome. Hypophosphatemia can have fatal effect through numerous clinical features such as cardiac failure, arrhythmias, seizures, tremor, rhabdomyolysis, and respiratory failure. Hypomagnesaemia can also occur and complicate the feeding treatment by cardiac arrhythmia, hypertension crises,

tremor, tetany, confusion, seizures and abdominal pain. Hypokalemia can appear as a consequence of starving to feed the anorexic patient, but more common it is present in patients with binge-purge subtype because of vomiting or induced laxative diarrhea. All of these electrolyte deficiencies must be treated properly to offer a safe outcome. Other complications that can occur during re-feeding are elevated transaminase levels with liver failure, coagulation problems, acute tubular renal necrosis, tubular renal nephritis, cardiac Torsade du Pointes, arrhythmias, prolonged QTc, cardiomyopathy [53, 54].

If the patient is in a severe state for the re-feeding process doctors have to decide if an enteral tube feeding is required. For this intervention training and experience is needed, because the gut wall in malnourished patients is extremely thin and there is the risk of rupture, a lethal complication. Also after passing the tube, the safety position must be checked before it is used. In order to confirm the placement of the tube, gastric fluid can be aspirated, and the level of acidity can be determined, or an X-ray might be required. Gastrostomy tubes are not advisable to use, they need an endoscopic or radiologic approach, with the risk of peritonitis or other infections. Feeding through a tube is just a temporary solution, as part of an integrated plan, and patients need to be responsible and slowly introduce a full oral intake [55].

For osteopenia the recommended treatment is weight restoration and a normalization of the endocrine hormones. Also hormones substitution with transdermal estrogen, analogue of parathyroid hormone, bisphosphonates, raloxifene and denosumab drugs can be prescribed in this case [56].

Psychotherapy should be the treatment of choice for all eating disorders. The number of sessions required is different in each eating disorder type. In the case of anorexia nervosa no specific psychotherapy has shown clear superiority, but the number of sessions required is the highest, with an average of 40. Adolescents with anorexia nervosa have better outcomes after family therapy. For bulimia nervosa and binge eating disorder psychotherapy should be offered as a first line treatment, especially cognitive behavior therapy, or as an alternative interpersonal psychotherapy, psychodynamic, or family-based therapy in children and adolescents with bulimia nervosa. Usually the number of sessions required is less for bulimia and binge eating disorder, with a medium of 20 weeks [57, 58].

Pharmacological therapies with positive results in controlled trials in eating disorders are second generation of antipsychotics and antidepressants. For anorexia nervosa olanzapine had the most beneficial effects, in the case of bulimia nervosa and binge eating disorder Fluoxetine showed a good outcome, with a small effect from Lisdexamfetamine for binge eating disorder and Mirtazapine for avoidant restrictive eating disorder [59, 60].

9. Evolution and prognosis

Eating disorders characterized by low weight associate high morbidity and mortality rates. A follow-up study which monitored hospitalized patients with anorexia nervosa reported an average life expectancy of 39 years. Studies showed that 1/3 of patients suffering from anorexia nervosa tend to have a full recovery, in same percentage patients have just a partial recovery, and approximately 1/3 will have a chronic evolution or die. On a more optimistic point of view, a full recovery has been shown to be possible but with early intervention plan and sustained treatment over a medium of almost 7 to 9 years [61].

In general the prognosis for bulimia nervosa is good with treatment and assistance, but if the patient associate low self-esteem or different forms of personality

disorders these aspects can affect the outcome. Little is known about the prognosis in binge eating disorders or other eating and feeding disorders [62].

For all eating disorders, poor prognostic factors can be considered as: late onset, anxiety in the presence of others when eating, severe weight loss, association of other chronic disorders, difficulties in childhood for social adjustment, being a male, having conflicts with parents or friends, being present binge and purge behaviors, low motivational for change, shame or not having enough money for engaging in psychotherapies sessions, association of concomitant depressed mood and obsessive body image preoccupation. Better evolutions have been identified in adolescents than adults, but only in association with family psychotherapy making the majority of these patients partially recovered, with less episodes of relapse. Also, in the young group distribution an onset in adolescents have a much better prognosis than one in early childhood [62].

10. Insight in eating disorders

There is now a general agreement that insight is not an all-or-none phenomenon, but rather a complex, multidimensional concept in psychiatric disorders. It includes different components, like the ability of a patient to recognize the presence of a mental illness, the capacity to accept that some symptoms are pathological and are determined by a mental disorder, the awareness of illness's consequences and compliance with treatment [63].

Lack of insight has been largely demonstrated in schizophrenia, other psychoses and bipolar disorder [64–67]. DSM-5 included an “insight” specifier in OCD, body dysmorphic and hoarding disorder. Also, different levels of lack of insight, from good to absent, have been found in other psychiatric disorders, like depressive and anxiety disorders, specific and social phobias, Alzheimer disease and other neuro-cognitive disorders, eating disorders [68–71].

Patients with anorexia nervosa (AN) commonly lack insight, at least in the early stages of illness. This element will determine important difficulties in assessment, lack of compliance or avoidance of treatment, frequent relapses and also may limit the identification of eating disorders. These patients have distorted cognitions about body weight and shape and also, they are ambivalent regarding motivation to recover [72]. On the other hand, patients with bulimia nervosa (BN) have typically a bigger level of motivation to recover.

Until now there is not a disorder-specific scale for the assessment of insight in patients with eating disorders. Many researchers use SAI-ED (the Schedule for the Assessment of Insight for EDs), a short self-report questionnaire, which has only seven items. Even if the SAI-ED has not been fully validated, has a significant level of internal consistency [72].

10.1 Factors associated with insight

In their study evaluating the clinical insight in 193 patients with anorexia nervosa, Gorwood et al. observed that 88% of patients (171) had a high level of insight (SAI-ED total score > 4) and 12% of patients (22) had a poor insight (SAI-ED < 4).

The authors drew three important conclusions:

1. Insight was not improved in a vast majority of patients, even if they followed 4 months of specialized care and all clinical and cognitive markers improved.

2. In this study, the only factor that has been demonstrated improving insight was minimum BMI.
3. Premorbid IQ was highly associated with the level of baseline insight.

Other studies revealed other factors correlated with insight (cognitive functions - memory and executive functions), psychiatric and addictive comorbidities, associated personality disorders prescribed psychotropic drugs, social cognitions, use of psychotherapy [72–76].

11. Psychiatric comorbidities in eating disorders

Beside comorbid somatic conditions of eating disorders (anemia, arteriosclerosis, hypertension, high cholesterol, high triglycerides, myocardial infarction, lung problems, stomach ulcer, Bowel problems, liver diseases, fibromyalgia, stroke, epilepsy or seizures, cancer, arthritis, osteoporosis, sleep problems), all three EDs (eating disorders) are associated with other psychiatric conditions, especially mood disorders, anxiety disorders, posttraumatic stress disorder, substance use disorder and personality or conduct disorder [77].

Regarding mood disorders, most common associated with EDs are major depressive disorder, persistent depression, bipolar I [78]. Affective disorders, substance use disorders and anxiety disorders represent the most common predictive factors for suicide. Researchers have reported also that eating disorders are associated with suicide. The meta-analysis of Smith et al. [78], which included 2611 longitudinal studies, concluded that ED diagnosis is significantly associated with an increased risk for suicide attempt (SA) although the rate of SA varied considerably across studies [78]. In the group of patients with anorexia nervosa (AN), the rate of SA was between 3 and 20% [79]; in bulimia nervosa patients (BN), the rate ranged between 25 and 35% [79]; and in BED patients, the rate was 12.5% [78] and 20.8% when combining all EDs [80]. In the study of Udo et al., which included 36,171 respondents in the Third National Epidemiological Survey on Alcohol and Related Conditions (NESARC-III), the prevalence of suicide attempts was 24.8% for AN, 15.5% for anorexia nervosa-restricted type (AN-R), 44.1% for anorexia nervosa binge/purge type (AN-BP), 31.4% for bulimia nervosa, and 22.9% for binge-eating disorder (BED) [77].

Regarding anxiety disorders, most common associated with eating disorders are panic disorder, social anxiety disorder, specific phobias and general anxiety disorder [78]. The association between social anxiety and EDs could be a part of a wider socio-emotional phenotype which it is considered to contribute to the development and maintenance of EDs. SA may be a risk factor for ED, or SA may be secondary to the ED, as a consequence of ED psychopathology or malnutrition [81].

Abuse of substances is common in EDs, the lifetime prevalence being estimated between 23 and 37% [82]. Tobacco, caffeine and alcohol were the most prevalent SUD in the study of Bahji et al., being followed by cannabis and cocaine [83, 84].

Between axis II DSM diagnoses, most common comorbidities in ED are antisocial, borderline and schizotypal personality disorders and conduct disorders [78].

Conflict of interest

The authors declare that they have no conflict of interest.

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