UNIT 10 NUTRITIONAL MANAGEMENT OF EATING DISORDERS

Structure

10.1 INTRODUCTION

In the last unit, we focused on weight management. It is important to understand that the problems associated with too much deviation on either side from the appropriate range of body weight increases our risk of health problems. Obsession with slimming, especially in the adolescent age group may result in eating disorders like anorexia nervosa, bulimia nervosa and other eating disorders. What are these eating disorders? What are the strategies employed for treating such problems? How to cope with the problems of refeeding individuals after acute starvation? These are some of the issues discussed in this unit.

Objectives

After studying this unit, you will be able to:

- define the eating disorders,
- differentiate between the different eating disorders,
- diagnose patients suffering from different eating disorders such as anorexia nervosa, bulimia nervosa, binge eating disorder etc.,
- describe the management of these eating disorders, and
- plan for the nutritional management of these disorders.

10.2 EATING DISORDER – A REVIEW

If you talk to a group of young boys and girls in an informal setting about their physical appearance, you will find that a majority of them are dissatisfied with their weights, as well as, their physical appearance. Boys in general want to be taller and want to have

more muscular bodies which in fact, is a healthy trend. Most girls, on the other hand, view themselves as fat and want to look slimmer the so-called 'Aishwarya Rai Syndrome'. Sometimes, the obsession with body weight may be so severe that it leads to eating disorders like *anorexia nervosa* and *bulimia nervosa*. These are psychiatric disorders, primarily affecting adolescent girls or young women, who had been previously healthy but start developing a paralyzing fear of becoming fat.

In addition to these two disorders mentioned above, overlap syndromes also exist. Some emaciated patients who fulfill the criteria of true anorexia nervosa may show bulimic behaviour at some time. Similarly, subjects with bulimia often pass through a phase of anorexia. In our discussion, we will assume that the two disorders are different expression of a psychological obsession with body weight.

Other eating disorders such as *eating disorder not otherwise specified* or *binge eating disorder* or *childhood eating disorder* and *eating disorder in athletes* have also been observed. We will study about some of these disorders, with particular focus on anorexia and bulimia in this unit. Before we move further, it would be useful to define some common terms that would appear in this unit as given in Table 10.1 in order to facilitate their understanding at this stage.

Table 10.1: Definitions of some common eating disorders

Anorexia	It refers to loss of appetite, especially as a result of disease.
Anorexia Nervosa	A disease characterized by refusal to maintain a minimally normal body weight, intense fear of gaining weight, body image distortion and amenorrhoea in post menarcheal females.
Binge	An episode of eating marked by three particular features: 1) the amount of food eaten is larger than most persons would eat under similar circumstances, 2) the excessive eating occurs in a discreet period, usually less than 2 hours, and 3) the eating is accompanied by a subjective sense of loss of control.
Binge Eating Disorder	A disorder characterized by the occurrence of binge eating episodes atleast twice a week for a 6-month period.
Bulimia Nervosa	A disorder characterized by repeated episodes of binge eating followed by inappropriate compensatory methods such as purging, including self-induced vomitting or misuse of laxatives, diuretics or non-purging including fasting or engaging in excessive exercise.
Eating Disorder not Otherwise Specified (EDNOS)	A diagnostic criteria for eating disorders that fail to meet full criteria for either anorexia nervosa or bulimia nervosa.
Purging	It is a method intending to reverse the effect of binge eating. This may involve self-induced vomiting, which is the most common purging method. Additional methods may include laxatives, enema and diuretic abuse.

Now that you are aware of the different disorders and the episodes, methods associated with them, we will move further and study about the different disorders – their prevalence, incident, etiology and the diagnostic criteria in detail. We begin with anorexia nervosa.

10.3 ANOREXIA NERVOSA

Anorexia nervosa, as you have read above, is a psychological eating disorder characterized by somatic delusions that one is too fat despite being emaciated, and refusal to maintain a minimally normal weight for height and age. The condition includes weight loss leading to maintenance of body weight 15 percent below normal; an intense fear of weight gain or becoming fat, despite the individual's underweight status; a disturbance in the self-awareness of one's own body weight or shape; and in females, the absence of at least three consecutive menstrual cycles that would otherwise be expected to occur. Individuals with anorexia nervosa are unwilling or refuse to eat enough food to maintain a body weight that is normal or expectable for their age and height (most clinician's use 85% of normal weight as a guide). Such individuals, typically display a pronounced fear of weight gain and dread of becoming fat although they are dramatically underweight. Concerns and perceptions about their weight have an extremely powerful influence and impact on their self-evaluation. The seriousness of the weight loss and its physical effects is minimized or denied.

From the above description, it is evident then that anorexia nervosa is a condition characterized by voluntary self-starvation and emaciation. The patients have body image distortion, causing them to feel fat despite their often cachectic (weight loss, wasting of muscle, loss of appetite, and general debility) state. So then, how can we find out for sure whether a person is simply underweight or is he/she suffering from an eating disorder? For this purpose, the *American Psychiatric Association* has laid down certain diagnostic criteria in the *1994 Diagnostic and Statistical Manual of Mental Disorders*. Let us consider these criteria next, particularly with reference to anorexia nervosa.

Diagnostic Criteria – Anorexia Nervosa

Table 10.2 gives the American Psychiatric Association diagnostic criteria for anorexia nervosa. Although the manual does not use body mass index criterion of weight for anorexia, a BMI of less than 18 is considered the borderline for diagnosis. Amenorrhoea (absence or stopping of menstrual periods) is an invariable feature. An expressed intense fear of gaining weight even though the individual is underweight completes the diagnosis.

Table 10.2: Diagnostic criteria for Anorexia Nervosa

1.	Refusal to maintain body weight at or above a minimally normal weight for age and height, (i.e. weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected) .
2.	Intense fear of gaining weight or becoming fat even though underweight.
3.	Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self evaluation, or denial of seriousness of the current low body weight.
4.	In postmenarchal females, amenorrhoea i.e. absence of atleast three consecutive menstrual cycles.

Source: From Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Washington, DC, American Psychiatric Association, 1994.

A *restricting type* or the *binge/purging subtype* of anorexia nervosa also exist. What is the difference between these two subtypes? Let us consider. During a current episode of anorexia nervosa, if the person has not regularly engaged in binge eating or purging behaviour, the individual may be diagnosed as *the restricting type.*

On the other hand, during the current episode of anorexia nervosa, if the person has regularly been engaged in binge eating and purging behaviour, the anorexia nervosa patient is *binge/purge subtype*. Though binge eating and purging are characteristic features of bulimia nervosa, as you will soon find out, low body weight is the major factor that differentiates bulimia nervosa from this subtype of anorexia nervosa. Thus according to the established diagnostic criteria, patients who are 15 percent below normal body weight and binge eat or purge are considered to have anorexia nervosa.

Having looked at the diagnostic criteria, let us next review how common is this problem? What is the cause for this disorder and what are the clinical manifestations/ characteristics of anorexia nervosa?

Prevalence/Incidence

The disorder occurs most commonly in adolescent girls and young women, but adolescent boys and young men may be affected more rarely, as may children approaching puberty and older women up to the menopause. Although the prevalence/ incidence of the disorder is not known with certainty, about 0.5% to 1.0% adolescent girls and young women are reported to suffer from anorexia nervosa that meets the full criteria. Its incidence (appearance of new cases) among the 10-19 year old girls has definitely increased during the past decade. Anorexia nervosa appears to be more prevalent in industrialized countries that embrace and idealize a thin body type, but recent reviews suggest that it is increasing even in developing third world countries, such as ours.

What then is the cause for this disorder? Read and find out next.

Etiology

The exact cause of eating disorders is not known. It is multifactorial in origin in which the personality of the patient, family relationship, socio-cultural factors and may be genetic factors play an important role.

Although the fundamental causes of anorexia nervosa remain elusive, there is growing evidence that interacting socio-cultural and biological factors contribute to its causation, as do less specific psychological mechanism and a vulnerability of personality.

It is possible that the disorders begin when there are disturbed family relationships, e.g., when the parents pretend to be getting along well with each other but are actually highly dissatisfied with their marriage. Such a family may be overprotective, rigid and too goal oriented. Some may have unusual interest in weight, food or shape of the body. The eating disorder for the child in such a family serves as a focus in order to bring control into an otherwise chaotic life. It is not clear how these factors lead to intense fear of being fat that is central to both anorexia and other eating disorders like bulimia about which we shall learn later in this unit.

Psychiatric illnesses like depression and obsessive compulsive behaviour very frequently are found in those with eating disorders, especially bulimia. These abnormalities may predispose to the development of eating disorders.

Cultural factors are important. Today everyone wants to be healthy and fit. This may reinforce the fear of fatness in an emotionally unstable person; and may tip the borderline case into frank disorder.

Occupation may also play a role. Dancers have a prevalence of anorexia nervosa 10 times that of the general population. Some studies show that a genetic component may be involved as well. However, such involvement in the causation of these disorders is considered only minor, if at all it exists. Apart from these, other multidimensional causative factors that lead to anorexia nervosa are: vulnerable personality;

psychological conflicts – individual and family; socio-cultural factors – cult of thinness, hazardous dieting, social class and race and finally genetic and constitutional factors.

Next, a review on the clinical manifestations and medical complications follows.

Clinical Features and Medical Complications

Anorexia nervosa, as we have learnt above, is a disorder characterized by deliberate weight loss, induced and/or sustained by the patient. You will notice that the individuals suffering from anorexia nervosa have a typical and distinctive appearance. Their body appearance makes them look younger than their age. The clinical characteristics and the medical complications associated with this disorder are included herewith:

- The patients deny hunger, thinness or fatigue despite profound weight loss.
- They may be preoccupied with food and may take pleasure in cooking and serving meals for others.
- They generally have constipation and are intolerant to cold. Patients are hypothermic and often wear more clothing than is environmentally appropriate.
- In severe cases, the bones protrude through the skin, as there is hardly any body fat.
- The skin may be dry and scaly.
- Palms may be yellow because of carotenaemia (high level of yellow pigment carotene in blood).
- Body hair is increased. Frank hirsutism (excessive growth of coarse hair in women).
- Oedema may be present.
- Parotid glands may be enlarged.

Anorexia nervosa, in fact, constitutes an independent syndrome in the following sense:

a) the clinical features of the syndrome are easily recognized, so that diagnosis is reliable with a high level of agreement between clinicians, and

b) follow-up studies have shown that, among patients who do not recover, a considerable number continue to show the same main features of anorexia nervosa, in a chronic form.

Common physical characteristics include lanugo (covering of fine, soft hair), brittle listless hair; cyanosis (abnormal, bluish colour) of the extremities. Bradycardia below 60 beats per minute and hypotension below 70 mm Hg (systolic) are frequently present. Further, laboratory findings include anaemia, and low serum potassium and albumin levels. Plasma cholesterol is occasionally high but triglyceride levels are normal. Glucose tolerance is abnormal. A number of hormonal disturbances are present. The disorder is associated with undernutrition of varying severity, with resulting secondary endocrine and metabolic changes and disturbances of bodily function. There remains some doubt as to whether the characteristic endocrine disorder is entirely due to the undernutrition and the direct effect of various behaviours that have brought it about (e.g. restricted dietary choice, excessive exercise, alterations in body composition, induced vomiting and purgation and the consequent electrolyte disturbances), or whether uncertain factors are also involved.

Complications include sudden death because of a cardiac problem. A decline in weight to 35% below the ideal increases the risk of death. Other physical complications are listed in Table 10.3.

Table 10.3 : Physical complications of anorexia nervosa

• Amenorhoea / loss of libido	• Gastric dilatation
• Hypothermia	• Myopathy and neuropathy
• Peripheral oedema	• Impaired liver function
• Congestive heart failure	• Delayed puberty (if early onset)
• Hypokalaemia	• Osteoporosis
• Bone marrow hypoplasia	

We will take up the management of anorexia nervosa and bulimia nervosa together later in this unit. Now let us get to know about bulimia nervosa.

10.4 BULIMIA NERVOSA

Bulimia Nervosa, as you may recall studying earlier, is a disorder characterized by episodes of binge eating or very rapid intake of large amounts of high calorie food accompanied by self-induced vomiting. Use of laxatives and diuretics is also practiced to lose weight. Patients fear that they will start gaining weight if they stop purging. It occurs in those who want to eat more but at the same time want to remain thin.

So, what is typical or characteristic feature of bulimia nervosa patient? It is a recurring episode of binge eating followed by one or more inappropriate behaviour to prevent weight gain. These behaviours may include self-induced vomiting, laxative abuse, diuretic abuse, excessive fasting or compulsive exercise. The combination of heightened anxiety, low self-esteem, overconcern about body shape, physical discomfort and intense guilt provokes the drive to purge the food by self-induced vomiting, excessive exercise or the misuse of laxatives or diuretics mentioned above. Figure 10.1 illustrates the vicious cycle that maintain binge eating. This perspective on the perpetuation of bulimia nervosa is a cognitive one.

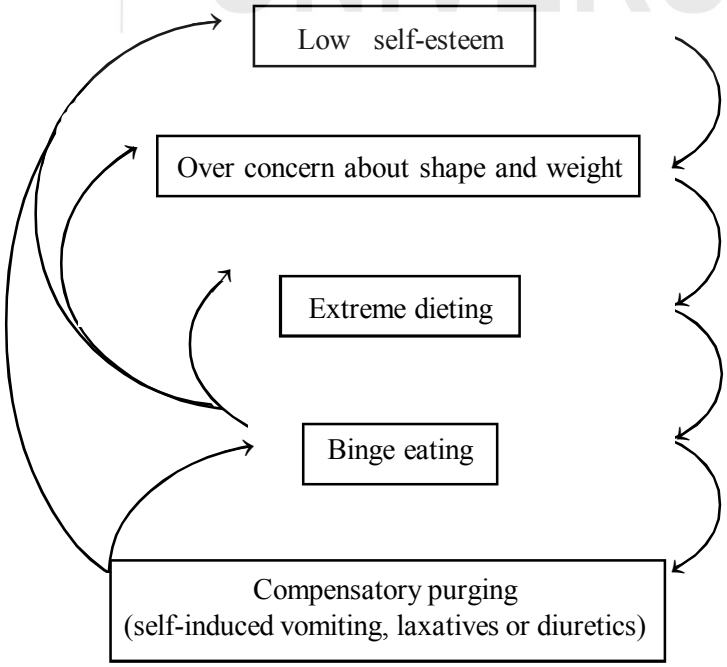

Figure 10.1: The cognitive view of the maintenance of bulimia nervosa

Source : Adapted from Fairburn and Cooper, 1989.

The diagnostic criteria for bulimia nervosa as laid down by the *American Psychiatric Association* is described next.

Bulimia Nervosa - Diagnostic Criteria

Bulimia Nervosa patients, unlike those of anorexia nervosa with binge and purge subtype, are typically within the normal weight range, although some may be slightly underweight or overweight. The common complaints are bloating and flatulence (due to excessive gas production), abdominal pain, constipation and nausea. The patients are secretive about the eating-vomiting episodes so that family and friends do not know about it. Generally, one episode occurs daily. Calorie dense and high carbohydrate foods like icecream, cold drinks, bread, jam etc. are eaten in large amounts. Bulimia literally means 'ox-hunger' and the term given to the eating pattern is 'dietary chaos'. Patients tend to suffer from dental caries. Table 10.4 gives the diagnostic criteria of this disorder.

Table 10.4: Diagnostic criteria for bulimia nervosa

1. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following
   a) Eating, in a discrete period of time (e.g., within any 2 hour period), an amount of food that is definitely larger than most people would eat during similar period of time under similar circumstances.
   b) A sense of lack of control over eating during an episode e.g., a feeling that one cannot stop eating or control what or how much one is eating.
2. Recurrent inappropriate compensatory behaviour to prevent weight gain such as self-induced vomiting, misuse of laxatives diuretics or other medications; fasting; or excessive exercise.
3. The binge eating and inappropriate compensatory behaviours both occur, on an average, at least twice a week for 3 months.
4. Self-evaluation is unduly influenced by body shape and weight.
5. The disturbance does not occur exclusively during episodes of anorexia nervosa.

Source : From Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Washington, DC, American Psychiatric Association, 1994.

Bulimia nervosa, is further characterized as the *purging type* or the *non-purging type.* In the *purging type*, during a current episode of bulimia nervosa, the person regularly engages in self-induced vomiting or the misuse of laxatives, diuretics or enemas. In the *non-purging type*, during an episode of bulimia nervosa, the person uses other inappropriate compensatory behaviours, such as fasting or excessive exercise as mentioned earlier, but does not regularly engage in self-induced vomiting or use of laxatives, diuretics etc.

Diagnostic criteria for bulimia nervosa require that at least twice a week for 3 months patient must have episode of consuming a very large amount of food, which a normal person is not capable of eating. There must be evidence that binge eating, which is central to the diagnosis, is followed by self-induced vomiting which is seen in 80% to 90% of persons with bulimia nervosa. Disturbed body image is also an essential feature.

Further, in bulimia, weight fluctuations are common. Patients even though thin, may be well within 15% of the ideal weight, some may even be overweight as informed earlier. About 50% have normal menstrual cycle. Physical findings are generally minimal. It is important to look for scars from self-mutilation in every suspected case.

Well, then what causes this eating disorder?

Etiology

Bulimia nervosa is a multifaceted disorder with psychologic, physiologic, developmental and cultural components. There may be a genetic predisposition for the disorder. Other predisposing factors include psychologic and personality factors, such as perfectionism, impaired self-concept, affective instability, poor impulse control and an absence of adaptive functioning to maturational tasks and developmental stressors (e.g., puberty, peer and parental relationships, sexuality, marriage and pregnancy).

Researchers suggest that abnormalities of central nervous system neurotransmitters may also play a role in bulimia nervosa. Furthermore, several familial factors may increase the risk of developing this disorder. For example, researchers have discovered that first- and second-degree relatives of individuals with bulimia nervosa have an increased incidence of depression and manic-depressive illnesses, eating disorders, and alcohol and substance abuse problems.

Well, then how common is this disorder? Who are at risk? Let us read and find out.

Prevalence/Incidence

Bulimia nervosa appears to have become more prevalent during the past 30 years. We do not have much data on Indian population related to this disorder. However, National Association of Anorexia Nervosa & Associated Disorders States that 1.5% American women suffers from bulimia nervosa (ANAD, 2019). It is 10 times more common in females than in males. The condition usually becomes symptomatic between the ages of 13 and 20 years, and it has a chronic, sometimes episodic course.

The clinical manifestations and medical complications linked with bulimia nervosa are discussed next.

Clinical Features and Medical Complications

Unlike, anorexia nervosa, in bulimia you will find that symptoms are more difficult to detect because patients are usually of normal weight and are secretive in behaviour. Comorbid mood, anxiety, personality disorders and substance-abuse related disorders, as highlighted in Table 10.5, may also be commonly noted, although it is not clear if the mood disturbances is a function of bulimia nervosa or a separate phenomena. Common sign/symptoms typical of bulimia may include:

Signs/Symptoms of Bulimia

- Binges, minimum twice a week for three months
- Purging
- Menstrual irregularities
- Swollen glands
- Frequent fluctuations in weight
- Inability to voluntarily stop eating/feeling guilty or ashamed about eating
- Depressive moods
- Persistent over concern with body shape and weight
- Overeating in reaction to emotional stress.

Table 10.5: Psychiatric conditions commonly coexisting with bulimia nervosa

Mood disorders	**Anxiety disorders**
Major depression	Panic disorder
Bipolar disorder	Obsessive-compulsive disorder
	Generalized anxiety disorder
	Post-traumatic stress disorder
Substance-related disorders	**Personality disorders**
Alcohol abuse	Borderline personality disorder
Stimulant abuse	Histrionic personality disorder
Polysubstance abuse	Narcissistic personality disorder
	Antisocial personality disorder

The medical complications of bulimia nervosa range from fairly benign, transient symptoms, such as fatigue, bloating and constipation, to chronic or life-threatening conditions, including hypokalemia (low potassium levels), cathartic colon, impaired renal function and cardiac arrest. Serious medical complications of bulimia nervosa are uncommon, but patients may suffer from dental erosion, swollen salivary glands, oral and hand trauma, gastrointestinal irritation and electrolyte imbalances (especially of potassium, calcium, sodium and hydrogen chloride). Laboratory tests reveal low potassium levels (hypokalaemia) because of vomiting and laxative use. Hormonal changes are less prominent than in anorexia nervosa and may be absent altogether. Complications include aspiration, oesophageal or gastric rupture, or inflammation of pancreas.

Physical complications arising due to inappropriate compensatory behaviour such as self-induced vomiting or use of laxatives etc. may include:

- Cardiac arrhythmias
- Renal impairment from hypokalaemia
- Muscular paralysis
- Urinary infection epileptic seizures
- Tetany (from hypokalaemic alkalosis)
- Swollen salivary glands
- Eroded dental enamel
- Injury to myenteric plexuses of large bowel

Having gone through the clinical features specific to both anorexia and bulimia nervosa, you would have realized that certain characteristics are specific to each one of these disorders, which can help us in diagnosing and differentiating these specific disease conditions. Table 10.6 presents the summary of the clinical features specific to the two disorders.

Table 10.6: Anorexia nervosa (AN) and bulimia nervosa (BN) - clinical features

Clinical Features	AN	BN
Food avoidance	Constant	Intermittent
Overeating	–	+++
Self-induced vomiting or purging	±	+++
Weight loss	+++	+
Amenorrhoea	+	+
Dread of weight gain	++	+++

Where AN = Anorexia nervosa, BN = Bulimia nervosa

With this comparison, we end our study of bulimia nervosa. Next, we shall get to know about the eating disorder not otherwise specified.

Check Your Progress Exercise 1

1. What are the two main eating disorders? Discuss their etiology.

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2. Enumerate any five clinical features of anorexia nervosa.

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3. List the signs/symptoms associated with Bulimia. Also mention any two physical complications.

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4. Classify the given characteristics under the appropriate columns: (i) Ox hunger, (ii) binge eating and vomiting, (iii) hormonal disturbances prominent, (iv) body weight <85% of that expected, (v) dietary chaos, (vi) voluntary self-starvation, (vii) emaciation, (viii) hypokalemia, (ix) use of laxatives, (x) carotenemia and (xi) gastric rupture.

Column A Anorexia Nervosa	Column B Bulimia Nervosa
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10.5 EATING DISORDER NOT OTHERWISE SPECIFIED (EDNOS)

In section 10.2 earlier, we emphasized that a diagnostic category for eating disorders that fail to meet full criteria for anorexia nervosa or bulimia nervosa is termed as eating disorder not otherwise specified. In fact, according to the *American Psychiatric Association*, this category is for disorders of eating that do not meet criteria for any specific eating disorder. These disorders are highlighted in Table 10.7.

It is interesting to note that patients who fall under eating disorder not otherwise specified constitute about 50% of the population suffering with eating disorders. It is equally important to understand that if left untreated, patients with an eating disorder not otherwise specified may develop full-fledged anorexia nervosa or bulimia nervosa.

Besides EDNOS, another specific eating disorder identified is the binge eating disorder. Let us get to understand it and see how it differs from other eating disorders.

Table 10.7 : Diagnostic criteria for eating disorders not otherwise specified

1. For females, all of the criteria for anorexia nervosa are met except that the individual has regular menses.
2. All of the criteria for anorexia nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.
3. All of the criteria for bulimia nervosa are met except that the binge eating and the inappropriate compensatory mechanism occur at a frequency of less than twice a week or for duration of less than 3 months.
4. The regular use of inappropriate compensatory behaviour by an individual of normal body weight after eating small amount of food.
5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.
6. Binge eating disorder: Recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviours characteristic of bulimia.

Source: From Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Washington, DC, American Psychiatric Association, 1994.

10.6 BINGE EATING DISORDER

Binge eating disorder is probably the most common eating disorder. Binge eating you may recall we studied as an element of bulimia nervosa. In Bulimia, however, episodes of binge eating are followed by inappropriate behaviour such as purging, periods of fasting, or performance of strenuous exercise. People with binge eating disorder, by contrast, do not purge, fast or engage in strenuous exercise after binge eating. Additionally, people with bulimia are typically of normal weight or may be slightly overweight (the purging, etc., have little to no effect on the subject's body fat), whereas people with binge eating disorder are typically overweight or obese.

Binge eating disorder is a psychiatric disorder in which a subject:

- periodically does not exercise control over consumption of food,
- eats an unusually large amount of food at one time,
- eats much more quickly during binge episodes than during normal eating episodes,
- eats until physically uncomfortable,
- eats large amounts of food, even when they are not really hungry,
- always eats alone during binge eating episodes, in order to avoid discovery of the disorder,
- often eats alone during periods of normal eating, owing to feelings of embarrassment about food, and
- feels disgusted, depressed, or guilty after binge eating.

So can we say that binge eating disorder is compulsive eating? Binge eating disorder is similar to, but it is distinct from, compulsive eating. People with binge eating disorder do not have a compulsion to overeat and do not spend a great deal of time fantasicing about food. On the contrary, some people with binge eating disorder have very negative feelings about food. As with other eating disorders, binge eating is an expressive disorder – that is, the disorder is an expression of a deeper, psychological problem.

Now that we have studied about the different eating disorders, as a student of dietetics, it is crucial for us to learn how to manage these conditions. The management of anorexia nervosa and bulimia nervosa are discussed together in the next section.

10.7 MANAGEMENT OF EATING DISORDERS

We shall consider the components of the management of anorexia nervosa and bulimia nervosa together, since the nutritional consequences and nutritional management for both these conditions are on similar lines. However, before that, consideration needs to be given to symptoms of the starvation syndrome i.e. (starvation caused either by food restriction/dieting as in anorexia nervosa or problems related to food absorption as in purging or excessive exercise may mean that insufficient energy is consumed for weight maintenance in bulimia nervosa). Box 9.1 highlights the starvation syndrome .

Box 1 The Starvation Syndrome

What does starvation denotes? Let us find out.

Starts by not eating enough or at all.

Then begins by losing water and salts, glycogen, protein from muscle, organs, and finally, stored fat.

After a while, the body's "furnace" doesn't use as much as it used to (kicks down to save energy).

Right away, other changes begin to occur besides weight loss–changes we cannot see at first.

Very loose stools, thin hair, and baggy skin may appear over time.

Anaemia (not enough red blood cells, which carry oxygen) may make one feel weak, dizzy, and confused.

The kidney decreases urine formation, fluid often builds up in the tissues, making fingers and ankles swollen.

Impulse to not eat must be dealt with. Food as an energy source for every healthy body is important.

Other changes may occur. Social activity may decrease; often there is no energy to study or meet friends.

New attitude and habits must be started to get healthy again. Normal weight CAN and MUST be reached.

Source : Adapted from Krause & Mahan (11th ed.), Goodhart & Shils (18th ed).

Having looked at the symptoms specific to starvation let us proceed further. The treatment of patients suffering from eating disorders, you would realize, has to be done by a multidisciplinary team comprising of a physician, nutritionist and psychotherapists. Under no circumstances a nutritionist alone, however experienced she/he may be, should try to manage such cases on his own, without consulting experts from the other two disciplines. The increased psychological stress and the medical complications that accompany refeeding necessitate the presence of the team.

The treatment of eating disorders can be said to have three components.

A) Psychological Management

B) Medical and Biochemical Management, and

C) Nutritional Management

We shall review the psychological and medical management here in this section. The nutritional management shall be dealt in detail in section 10.8 next.

Psychological Management

All anorexia nervosa or bulimia nervosa patients are resistant to any kind of therapy and hospitalization may be a life saving measure, especially with anorexia nervosa patients. The intense fear of becoming fat and the disturbed perception of their weight status is what make treatment difficult. The supportive care by an understanding physician/ psychiatrist is most important. The patient needs to be repeatedly assured by the doctors that the treatment will not make her fat. The patient may be given some reward, may be in terms of freedom/ home-visit as she shows some gain in weight or even when she consumes extra food.

The patient needs to be told in a calm but realistic manner about the risks that accompany starvation including sudden death. You will recall reading earlier that sudden death is a real danger if the patient is below 35% of the ideal weight and if the weight loss has been rapid. For bulimic patients hospitalization may be required only for treatment of medical complications like aspiration or electrolyte imbalance. The short- term goal for treatment of bulimics may be stoppage of gorging-regurgitation cycles so that the load of food ingested may be limited. This also minimizes the chance of aspiration or gastric rupture. Psychiatric treatment is required because depression and anti social behaviour are common in bulimia.

The use of drugs remains controversial. The use of antidepressant therapy in both the disorders needs to be considered on individual merits of the case.

Biochemical and metabolic problems and their management

Hypokalaemia (low concentration of potassium ion in the blood), we learnt earlier, is a problem caused due to self-induced vomiting and/or laxative misuse. For this potasium supplementation is often required. Hyponatraemia (deficiency of sodium) may result from diarrhoea and vomiting, misuse of diuretics or excessive intake of water. Rapid correction of hyponatraemia and the use of hypertonic fluids are hazardous. Hence, medical treatment becomes important.

Further, in patients with eating disorder, iron, folic acid deficiency may occur and those who have been avoiding animal foods may be deficient in vitamin B_{12} as well. However, supplemental iron may be dangerous in the early stages of refeeding. Some people with eating disorders are also deficient in zinc. Zinc deficiency may cause altered taste, smell, appetite, as well as, a variety of neuropsychiatric symptoms. Taking zinc supplements may help. Recent studies with bulimia patients indicate that zinc supplements seem to reduce their obsession with weight and concern with body image.

A significant proportion of patients are deficient in thiamin and the increase in carbohydrate metabolism which occurs during refeeding may exhaust inadequate thiamin reserves. The early stages of refeeding are a high-risk period for biochemical, fluid balance and cardiovascular abnormalities and patients should be monitored closely. Patients at particular risk include those whose weight is very low, those who have had previous biochemical abnormalities or purge, and those with concurrent medical conditions such as diabetes, infection and major organ failure. Electrolyte disturbances are most likely to occur during the first 1-2 weeks of refeeding. There is a risk of hypophosphataemia (deficiency of phosphate) and acute thiamin deficiency when beginning refeeding. Abnormal liver function tests can occur at presentation or during refeeding. This appears to be self-limiting but other causes of liver dysfunction should be excluded. Delayed gastric emptying results in early satiety and sensations of abdominal fullness or bloating. Use of frequent small meals may help with this; metoclopramide may be used (usually in a reduced dosage of 5 mg three times daily), but is often of only limited effectiveness.

Next, let us get to know how to ensure nutritional management of eating disorders. But first let us revise what we have learnt so far by answering the check your progress exercise 2.

Check Your Progress Exercise 2

1. What is the diagnostic criterion for eating disorders not otherwise specified?

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2. How is binge eating disorder different than bulimia nervosa?

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3. What is the starvation syndrome?

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4. List the three components of the treatment of eating disorders. Why is medical management important?

   .....

   .....

   .....

Now, let us review the nutritional management of eating disorders in detail.

10.8 NUTRITIONAL MANAGEMENT OF EATING DISORDERS

Good nutritional management of patients with eating disorders requires attention to a number of areas. It is important to have a nutritional assessment of the patient through diet history, weight history, as well as, assessment of biochemical, metabolic and anthropometric measurements. A nutritional assessment form for eating disorders is included in Figure 10.2. Initial dietary assessment should be part of the overall assessment of patients with eating disorder. The initial assessment should cover only those aspects essential to immediate management decisions as highlighted in Figure 10.2 and may include:

- recent change in eating habit
- rate of weight loss
- binge eating episodes
- vomiting and laxative misuse
- gastrointestinal and bowel function
- fluid intake

- restrictions on the variety of acceptable foods
- other conditions that may require dietary management (such as diabetes, dehydration, hypophosphataemia etc.)
- presence of conditions that may affect nutritional requirements (such as infection or any trauma, growth)
- exercise schedule
- menstrual history
- use of vitamin/mineral supplements
- use of alcohol.

The aims of dietetic treatment should be to:

- establish a normal pattern of food intake,
- encourage a nutritional intake appropriate to the individual's needs, and
- maintain a body weight within a normal range.

Let us review the nutritional management of anorexia nervosa and bulimia nervosa, separately next.

Eating Disorder Assessment Form

Date of Birth .....

DIAGNOSIS Hospitalizations for Eating disorder:

Anorexia Nervosa	In-patient
Bulimia Nervosa	Day Patient
Eating Disorder NOS	Out-Patient
	Intensive
	Out Patient

WEIGHT HISTORY
Wt. Loss # lb.....from.....to.....
Minimum weight at current height.....
Maximum weight at current height.....
IBW:.....%IBW.....%Wt.loss:.... BMI%...
ANTHROPOMETRIC PROFILE
Skinfolds(mm):.....
Triceps.....Biceps..... Subscapular...
Suprailliac: .....
Sum of sites (mm):..... %Body fat.....
TST/o.....
MAC(cm):.....MAMC(cm):.....
MAMC%.....
BODY IMAGE.....
.....
.....
.....
FULL ALLERGIES.....
.....
.....
24-HOUR RECALL: .....
.....
.....
.....
.....
.....
FLUID INTAKE .....
.....
VITAMIN/MINERAL SUPPLEMENTS: ....
.....
.....
.....

OTHER SUPPLEMENTS .....
.....
.....
SUGAR AND FAT SUBSTITUTES:.....
.....
.....
MISCELLANEOUS: Chewing gum: .....
Hard candy: .....
Condiments: .....
.....
BINGES: # per day # per week
Duration per episode .....
Binge foods: .....
.....
Approximate kcal/binge: .....
.....
SELF-INDUCED VOMITING:
Times per day:..... Method:.....
LAXATIVES:
Type/brand:..... Amount.....
Duration of use:..... Frequency of use.....
DIURETICS: Type:..... amount.....
Duration of use.....Frequency of use.....
EXERCISE:.....
Type: .....
Minutes/day .....times/week .....
Purpose of exercise.....
MENSTRUAL HITORY:
Age of menarche.....
Last menstrual period.....
MEDICATIONS (Prescript on and over-the-counter) .....
.....
.....
BOWL FUNCTION : .....
.....

Figure 10.2 : Eating dissorder assessment form

10.8.1 Nutritional Management of Anorexia Nervosa

The overall goal of nutritional rehabilition of anorexia nervosa patients is to restore weight, normalize eating pattern, achieve normal perception of hunger and satiety, and correct biological and psychological sequelae of malnutrition.

To achieve this goal, we need to understand that in the severely malnourished patient, two separate but linked processes occur. First, inadequate food consumption leads to wasting and functional changes in all tissues. Second, the general metabolic response to infection, trauma or other stress results in further specific nutrient losses and cellular damage. Now starting to eat again after a period of prolonged starvation, what we call as the 'refeeding syndrome' can precipitate problems and complications in an anorexic patient. Therefore, the first step has to be to repair the machinery, with tissue repletion being a secondary consideration during the early phase of treatment. The nutritional management of severe anorexia nervosa is therefore, considered in terms of three consecutive phases:

- *Resuscitation*: First, identify and correct medical emergencies such as hypothermia, hypoglycaemia, electrolyte disturbance, dehydration and cardiovascular function as far as possible. Infections may also be treated.
- *Repair*: the tissue/organ functions cannot be restored unless the cellular activity has been repaired. In this context, the correction of multiple specific nutrient deficiencies, needs to be corrected, and
- *Repletion*: the ultimate objective of treatment is to return body composition to normal. But, abnormal body composition can only be corrected safely when the cellular machinery has been adequately repaired. Any aggressive attempts to drive weight gain at an early stage of treatment or correction of abnormal blood biochemistry are potentially dangerous. Hence, slow and systematic repletion and treatment regimen needs to be considered.

Clinical experience suggests that many of the untoward consequences of refeeding can be minimized or avoided by starting the patient on relatively small amounts of food and increasing the quantities progressively. Initial intake should be sufficient at least to prevent further weight loss. Thereafter, once the body is repleted, we need to provide for initial weight gain phase followed by controlled weight gain and finally weight maintenance phase. The guideline for nutrient/diet therapy and nutrient intake for anorexia nervosa patients therefore include:

A. Calorie Intake

Initial Intake: For refeeding and for all but the most severely ill patients intake levels should usually start at 20-25 Kcal/kg/per day i.e. approximately 1000 Kcal-1600 Kcal/ day. This level of intake should be continued until it can be confirmed that gut function is normal (i.e. bowel sounds are present) and that water overload, if present, is beginning to resolve. The latter is indicated by weight stabilization and normally occurs within 7–10 days. Thereafter, food intake should be increased as discussed next.

Weight gain phase: The food intake can be increased as quickly as the level of supervision and support will allow. Intake may have to be increased to as high as 30-35 Kcal/kg per day for some patients during the weight gain phase. A weekly weight gain of 0.5 -1.0 kg is generally regarded as optimum. There is some preliminary research evidence that a minimum weight gain of 0.5 kg per week results in greater weight gain at discharge than use of a higher minimum. A gain of 1 kg per week requires an energy intake of 1000 Kcal daily above the maintenance requirement. An intake of 2200-2500 Kcal daily will promote weight gain of 0.5-1.0 kg per week in most patients. The rate of gain will slow down as weight increases, owing to an increase in metabolic rate and physical activity. It may be appropriate to increase energy intake to compensate for this or to allow a slower rate of weight gain in order to facilitate stopping at the agreed maintenance figure. This is followed by the weight maintenance phase.

Weight maintenance phase: The intake level during weight maintenance for adults and as needed in children and adolescents for further growth and maintenance should be set at 25-30 Kcal/kg per day and 40-60 Kcal/kg per day respectively.

B. Proteins

To ensure adequacy, minimum protein intake should equal the recommended dietary intake for age and sex in g/kg ideal body weight. A protein intake in the range of 15 -20% of total calories is recommended. Protein sources of high biological value need to be included in the diet of the patient.

C. Carbohydrates

Carbohydrate intake in the range of 60-65% of calories is well tolerated. It is important to include sources of insoluble fibre for optimal health and for relief from constipation.

D. Fats

A dietary fat intake in the range of 25-30% of calories is recommended. Patients may have an aversion to fat, which makes weight gain difficult. Fat may therefore be included in the diet in a disguised form. For example, giving whole milk instead of toned milk will help.

E. Micronutrients

It is advisable to include 100% RDA multivitamin tablet with minerals. The use of prophylactic thiamine supplements in oral form is recommended for in-patients and those undergoing rapid weight gain. In the absence of data on the appropriate dose of thiamine, it is recommend to give 25 mg per day; in cases of confirmed deficiency, higher dosages may be required. Riboflavin deficiency may cause angular stomatitis and iron deficiency causes anaemia. Vitamin C deficiency can cause bleeding gums. These problems may need specific nutritional supplementation. Vitamin D requirements are higher than average in anorexia nervosa, owing to the risk of osteoporosis, and there is an argument for giving vitamin D supplements as part of refeeding. Calcium rich foods should also be included because of risk of osteoporosis and osteopaenia.

As discussed above, the patient must be encouraged to increase food intake gradually and decrease energy output to achieve a positive balance. A nasogastric tube may be needed but is not the preferred method and majority of patients can be fed orally. To ensure intake of sufficient calories, the feedings should start early in the day. Initially, the intake is generally low and patient can tolerate three meals per day, may be without abdominal distention and discomfort. But as the calorie prescription increases (>3000 Kcals may be required) the number of feedings must be increased. This may result in guilt feedings in patients because they feel that they are snacking between meals. It is wise to introduce calorie dense, may be commercial liquid supplements between meals which are easier to discontinue when the desired weight is reached. During treatment daily food record and caloric intake should be recorded along with eating behaviour, time of the meal and the meal consumed, food/drink eaten and their amounts etc. In addition, all the foods eaten at a binge and the time and method of purging also needs to be noted down whenever they occur to further plan the treatment and monitor the course of the disorder. In addition to the food diary, record of exercise undertaken should also be maintained to evaluate energy balance. Body weight must be checked daily when patient is hospitalized and later once every one or two weeks after discharge.

Having gone through the nutritional rehabilitation described above you would realize that management of anorexia nervosa is complex and require different treatment modalities at different stages of illness and recovery. Next, let us learn about nutritional rehabilitation of bulimia nervosa.

10.8. 2 Nutritional Management of Bulimia Nervosa

Bulimia nervosa, we know, is characterized by the recurring episode of binge eating followed by one or more inappropriate behaviour to prevent weight gain. Therefore, the initial attempts in the treatment of bulimia are aimed at correcting the dietary chaos by breaking the gorging-regurgitation cycles. Instead of weight loss which is

the ultimate goal, stabilization of weight should be aimed at in the beginning. Generally 1200-1500 Kcals are prescribed at first with the same nutrient prescription as for anorexia nervosa. A standard multivitamin and mineral supplement is given initially. In general, a balanced diet providing 60-65% of the calories from carbohydrate, 15-20% calories from proteins and 25-30% from fat is reasonable. Small amount of dietary fat may be encouraged at each meal. Fat may be better tolerated when not visible as in foods like whole milk and cheese. Further, it would be beneficial to include more sources of essential fatty acids in the diet. It is important to remember that patients suffering from bulimia nervosa are likely to remain on low-calorie intake for longer period as compared to anorexic counterparts.

Although most patients with bulimia are normal to overweight, they may be hypermetabolic. This aspect must be considered when prescribing the calorie intake. If a low metabolism is suspected, initial calorie prescription may be equal to 100% of the Harris-Benedict predicted REE. Typically, this is around 1500 Kcal for adults. You may recall studying about the *Harris-Benedict* equation in Unit 4 earlier. We learnt that this equation can be used to calculate resting energy expenditure (REE), for men and women, along with the usual multiplication factor to provide adequate calorie intake as given herewith:

Calorie requirements/day : 1.25 × REE (for each 1^{O}C above 37^{O}C add 10% extra allowance)

Women REE = 655 + (9.6 × weight in kg) + (1.85 × height in cm) – (4.7 × age in years)

Men REE = 66 + (13.7 × weight in kg) + (5.0 × height in cm) – (6.8 × age in years)

This equation can be used to prescribe the calorie intake for weight maintenance in bulimia nervosa patients.

The patients of bulimia, because of the binge eating and purging behaviour in the past fail to recognize hunger and satiety signals. These biological cues get strengthened by regular meals and prescribed in-between snacks at a reasonable calorie level. Patients tend to digress from the prescribed pattern when a binge episode occurs during treatment. An important part of breaking this cycle is to get the individual to monitor their intake through completing a food diary. An example of a food diary is presented in Table 10.7.

Table 10.7: Example of a food diary

Time/Meal	Food Drink Eaten and Amount	Binge/Vomit/ Laxatives/ Eating Behaviour/ Food Tolerated	Comment/Feelings
Breakfast	Nothing	–	Not hungry
Mid Morning	Tea - 2 cups	–	Need something to fill my stomach. Really busy at work so no time to eat.
Lunch (1.30 p.m.)	2 dry chapatti, 1 katori dal, small cube of cottage cheese, 1 tomato, can of diet cola	–	Very hungry, feel as if I could eat more but must not.
Tea (5.00 p.m.)	Two gulabjamun	Vomited	Someone's birthday in the office so couldn't refuse. Feel really guilty and had to be sick.
Dinner	4 pieces of pizza, 2 packets of crisps, 2 bowls of ice cream, 6 snack size chocolate bars	Binge!! Vomited and took 10 laxatives	Couldn't decide what to have for dinner, so started on pizza. Could not stop this binge at any cost. I feel terrible.

Completing a food diary as mentioned above is a valuable aspect of treatment by identifying areas of difficulty and allowing progress to be monitored, as well as, enabling the individual to reveal problematic thoughts and feelings at the time they are consuming food. This can then be used as the basis for planning meals to lessen anxiety around eating. Patience and support from the dietitian and family members are crucial for helping the patients in retaining the positive changes regarding attitudes and eating habits. An important goal for nutritional management, therefore, is to establish the individual on a regular pattern of eating. Often, normal cues for hunger and satiety are disrupted through repeated cycles of binge and restrictive eating so encouraging a regular meal pattern also helps the sufferer to begin to identify hunger and fullness again. They should be encouraged to eat regular meals and snacks and to maintain this pattern of eating even after a binge. Each meal or snack should be based around carbohydrate, with moderate amounts of protein foods and vegetables and fruit. They should be encouraged to include non-diet foods and to include foods containing fat. It is also worth getting them to compile a list of foods normally avoided or associated only with binges and to encourage them to include these within their meal pattern, when they feel able to do so. The amount of food needed to meet energy needs is greater than that needed to consume sufficient nutrients. Thus, consumption of some energy dense, less nutritious food should be encouraged. A minimum intake of 1500 Kcal, as discussed earlier, is usually an appropriate level to begin with, increasing to an intake corresponding to the estimated average requirement for the particular patient as recovery proceeds.

Further, a detailed weight history should be carried out to include current, highest, lowest and ideal weights, and it should be stressed that recovery cannot be accomplished if the sufferer is trying to maintain a weight below normal. Thus, those with a pre-morbid history of obesity may have to accept that they will need to reach a weight that is higher than they would like to be. Weight stabilization should be an initial emphasis, particularly for those experiencing weight fluctuations. Even among patients of normal weight, nutritional counseling can be used to accomplish the desired results.

There is some evidence that treatment/management programmes that include dietary counseling as part of the programme are more effective than those that do not. Let us see how.

Nutrition counseling/education – an important component of management of eating disorders

Nutrition counseling can be used to accomplish a variety of goals, such as reducing behaviours related to the eating disorder, minimizing food restrictions, correcting nutritional deficiencies, increasing the variety of foods eaten and encouraging healthy and not excessive exercise pattern. *Nutrition Education* is an important aspect of the treatment. The patients report an extremely good knowledge of foods and nutrition. For example, most anorexia nervosa patients try to argue against adding calorie rich foods to their diet because they have known their energy values. However, their interpretation of facts may be faulty because of the nature of their illness. They need to be educated about the impact of malnutrition on growth, development and behaviour. They should be made aware of the importance of balanced diet, food guide pyramid and also the ineffectiveness of vomiting, laxatives and diuretics in long-term weight control. Education may be imparted individually or in a group setting.

Treatment of anorexia-bulimia syndromes is a long-term affair. Many a time's failures are experienced. It requires great perseverance and consistent effort by the patient, the family and the dietitian/physician for effective outcome. The prognosis of these eating disorders is highlighted next.

Prognosis: About 50% of the patients recover fully from anorexia nervosa and achieve normal weight, 30% improve but have a partial recovery and 20% will have lifelong problems with eating patterns. Older age of onset, long duration of illness, extreme weight loss and significant depression result in poor prognosis. Bulimia has even poorer

prognosis because of medical dangers of gorging and severe psychiatric disturbances. The suicide rate also is high in bulimic patients. Almost 40% of treated patients remain bulimic after one and a half year of treatment. About 2/3 experience relapse within a year of recovery. The outcome criteria e.g., weight, food intake, proper body image, menstruation and social, psychological and sexual adjustments must be assessed for a number of years after recovery. Early intervention and better treatment strategies today have helped in reducing the mortality from eating disorders.

Check Your Progress Exercise 3

1. What is the goal for the nutritional management of anorexia nervosa and bulimia nervosa?

   .....

   .....

2. Give the nutrient requirement for calories, proteins carbohydrates, fats and vitamin/minerals for an anorexia nervosa patient.

   .....

   .....

3. Give the importance of maintaining a food diary for a bulimia nervosa patient.

   .....

   .....

   .....

4. What is the importance of nutritional counseling in the management of eating disorders?

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   .....

10.9 LET US SUM UP

In this unit we learnt about the prevalence, classification, causative factors, metabolic changes, clinical manifestations and management of various problems related to eating disorders.

Anorexia nervosa and bulimia nervosa are the two eating disorders, which may have life threatening consequences. Patients with eating disorders, we learnt, display a broad range of symptoms that frequently occur along a continuum between those of anorexia nervosa and bulimia nervosa. The care of patients with eating disorder involves a comprehensive array of approaches including, psychiatric, medical and nutritional management. They necessitate treatment by a multidisciplinary team and not by nutritionist alone. The firm approach by the dietitian/treating doctors and regular follow up monitoring for many years afterwards helps in the recovery of patients.

10.10 GLOSSARY

Binge eating : an episode of excessive eating accompanied by a sense of loss of control over the eating process.

Bradycardia : refers to the slowness of the heart rate, usually fewer than 60 pulse beats per minute in an adult human.

Carotenemia : presence in the blood of yellow pigment carotene from excessive intake of carotene rich vegetables and fruits .

Cyanosis : an abnormal bluish colour of the skin or mucous membranes.

Hirsutism : an excessive growth of coarse hair particularly in women.

Lanugo : a covering of fine, soft hair, as on a leaf, an insect, or a newborn child.

Life expectancy : a statistical measure of the average of the remaining life time of an individual in the given group.

Overweight : being too heavy for one's height; a BMI of 25 to 30 kg/m^2

Purging : methods intended to reverse the effects of binge eating like self-induced vomiting, use of laxative, enema or diuretics.

10.11 ANSWERES TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress Exercise 1

1. The two main eating disorders are – Anorexia Nervosa and Bulimia Nervosa.

   It is multi factorial in origin in which the personality of the patient, family relationship and socio-cultural factors and may be genetic factors play an important role. It is not clear how these factors cause intense fear of being fat that is central to both anorexia and bulimia.

2. The clinical features of anorexia nervosa include: general constipation, intolerance to cold, visible skeletal frame, in severe cases, the bones protrude through the skin as there is hardly any body fat, the skin may be dry and scaly, palms may be yellow because of carotenemia.

3. Signs/ symptoms of bulimia are binging and purging, menstrual irregularities, swollen glands, weight fluctuations, over concern about body weight and depressive mood. Physical complications are mentioned in section 10.4. Read and answer on your own.

4. Anorexia Nervosa (iii), (iv), (vi), (vii), (x)

   Bulimia Nervosa (i), (ii), (v), (viii), (ix), (xi)

Check Your Progress Exercise 2

1. In this, for females all criteria for anorexia nervosa are met except that menstruations regular, criteria for bulimia nervosa is met except that binge eating is less than 3 months. Repeated chewing and spitting out without swallowing large amounts of food is also common.

2. Binge eating disorder is a common eating disorder, whereas in bulimia nervosa, episodes of binge eating is generally followed by inappropriate behaviour like vomiting, periods of fasting and performance of strenuous exercises. People with binge eating disorder are typically overweight unlike individuals with bulimia.

3. The starvation syndrome typically begins with no eating at all followed by loss of glycogen, muscle mass from the body and consequently lose of body weight. Other changes like loose stools, hair thinning and baggy skin starts appearing followed by anaemia. Thus, making an individual lifeless, dull, fatigued to do any work or to socialize.

4. The three components of treatment for eating disorders include: psychological management, medical and biochemical management and nutritional management.

Medical management is essential to give immediate attention to loss of body fluids, hyponatremia and hypokalemia, which need to be corrected at the earliest to prevent fluid and electrolyte imbalance.

Check Your Progress Exercise 3

1. Nutritional management for anorexia nervosa consists of resuscitation, repair and repletion whereas in bulimia nervosa the nutritional therapy aims at preventing dietary chaos by breaking the gorging – regurgitation cycles and by providing a balanced diet.
2. The requirements for calories for an anorexic patient include 30-40 Kcal/kg/per day i.e. approx. 1000-1600 Kcal/d. Proteins intake range from 15-20% of total calories recommended. Carbohydrates 50-55% of calories. 25-20% of fat calories is also recommended. A 100% RDA multi vitamin tablet with minerals.
3. In order to keep tract of the binging and purging behaviour, maintaining a food diary is advised. This diary is valuable as it allows monitoring of progress at the time of eating a meal. The diary can help identify times of distress, the feelings associated with the binge.
4. The role of nutritional counseling is used to achieve a variety of goals in patients like reducing behavours related to eating disorder, minimizing food restrictions, correcting deficiency, promoting intake of food is an healthy and encouraging way. It is an important aspect of treatment for patients with eating disorders.