



RAMAIAH
Institute of Technology

SCIENTIFIC FOUNDATIONS OF HEALTH

**Module 2:
Building healthy life styles for better future**

MODULE 2: OUTLINE

Developing Healthy Diet for Good Health

Food and Health

Nutritional Guidelines for Good Health & Wellbeingness

Obesity and Overweight Disorders and its Management

Eating Disorders

Proper Exercise for its Maintenance

Fitness Components for Health

Wellness and Physical Functiona

MODULE 2: BUILDING HEALTHY LIFESTYLE FOR BETTER FUTURE

Developing Healthy Diet for Good Health



MODULE 2: BUILDING HEALTHY LIFESTYLE FOR BETTER FUTURE

Developing Healthy Diet for Good Health

- Prepare most of your meals at home using whole or minimally processed foods.
- Choose from a variety of different proteins to keep things interesting.
- Make an eating plan each week.
- Choose recipes with plenty of vegetables and fruit. Your goal is to fill half your plate with vegetables and fruit at every meal.
- Choose brightly coloured fruits and vegetables each day, especially orange and dark green vegetables
- Avoid sugary drinks and instead drink water.
- Lower-fat, unsweetened milk is also a good way to stay hydrated.
- Eat smaller meals more often. Eat at least three meals a day with snacks in between.
- When you wait too long to eat you are more likely to make unhealthy food choices.

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HEALTHY DIET

- Fruit and vegetables: A wide variety of fruit and vegetables should be eaten and preferably five or more servings should be eaten per day.
- Bread, pasta, other cereals and potatoes: Plenty of complex carbohydrate foods should be eaten, preferably those high in fibre.
- Meat, fish and alternatives: Moderate amounts of meat, fish and alternatives should be eaten and it is recommended that the low fat varieties are chosen.
- Milk and dairy products: These should be eaten in moderation and the low fat alternatives should be chosen where possible.
- Fatty and sugary foods: Food such as crisps, sweets and sugary drinks should be eaten infrequently and in small amounts.

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FOOD PYRAMID



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DEVELOPING HEALTHY DIET FOR GOOD HEALTH

- Eating lots of vegetables and fruit
 - This is one of the most important diet habits. Vegetables and fruit are packed with nutrients (antioxidants, vitamins, minerals and fibre) and help you maintain a healthy weight by keeping you full longer.
 - Fill half your plate with vegetables and fruit at every meal and snack.
- Choosing whole grain foods
 - Whole grain foods include whole grain bread and crackers, brown or wild rice, quinoa, oatmeal and hulled barley. They are prepared using the entire grain. Whole grain foods have fibre, protein and B vitamins to help you stay healthy and full longer.
 - Choose whole grain options instead of processed or refined grains like white bread and pasta.
 - Fill a quarter of your plate with whole grain foods.

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DEVELOPING HEALTHY DIET FOR GOOD HEALTH

① Eating protein foods - Every day

- Protein foods include legumes, nuts, seeds, tofu, fortified soy beverage, fish, shellfish, eggs, poultry, lean red meats including wild game, lower fat milk, lower fat yogurts, lower fat kefir and cheeses lower in fat and sodium.
- Protein helps build and maintain bones, muscles and skin.
- Try to eat at least two servings of fish each week, and choose plant-based foods more often.
- Dairy products are a great source of protein. Choose lower fat, unflavoured options.
- Fill a quarter of your plate with protein foods.
- Limiting highly and ultra-processed foods

② Some minimally processed foods are okay

- These are foods that are slightly changed in some way but contain few industrially made additives.
- Minimally processed foods keep almost all of their essential nutrients.
- Some examples are: bagged salad, frozen vegetables and fruit, eggs, milk, cheese, flour, brown rice, oil and dried herbs.

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DEVELOPING HEALTHY DIET FOR GOOD HEALTH

① Making water your drink of choice

- Water supports health and promotes hydration without adding calories to the diet.
- Sugary drinks including energy drinks, fruit drinks, 100% fruit juice, soft drinks and flavored coffees have lots of sugar and little to no nutritional value. It leads to weight gain.
- Even though the fruit juice has vitamins and minerals, it has more sugar than the fruit and less fiber. It is not alternative to fruits.
- When safe drinking water is not available, quench your thirst unsweetened lower-fat milk, and previously boiled water.

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HEALTHY DIET



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HEALTHY DIET

- A healthy diet helps to protect against malnutrition in all its forms, as well as noncommunicable diseases (NCDs), including such as diabetes, heart disease, stroke and cancer.
- Unhealthy diet and lack of physical activity are leading global risks to health.
- Healthy dietary practices start early in life- fosters healthy growth and improves cognitive development, and may have longer term health benefits such as reducing the risk of becoming overweight or obese.
- Energy intake (calories) should be in balance with energy expenditure.

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FOOD & HEALTH - FOOD

- FOOD is the means that nourishes the body.
- Food may also be defined as any substance eaten or drunk which meets the needs for energy, body building, regulation and protection of the body.
- Food is the material from which our bodies are made.
- Eating right kind of food in right amounts ensures good nutrition and health.

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FOOD & HEALTH - NUTRITION

- Nutrition - is food at work in the body. It includes everything that happens from eating food to its usage in various functions of body.
- Nutrients are components of foods needed for body in adequate amounts for proper growth, reproduction and leading normal life.
- The science of nutrition deals with what nutrients we need, in what quantity, how to get them and how the body utilizes them.
- Adequate, optimum and good nutrition – indicates the right amount and proportion of nutrients for proper utilization for achieving highest level of physical and mental health.

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FOOD & HEALTH – NUTRITIONAL STATUS

- Nutritional status – state of the body as a result of foods consumed and their utilization by the body. Nutritional status can be good, fair and poor.
- Good nutritional status – characterized by an alert, good natured personality, a well developed body with normal weight for height, well developed and firm muscles, healthy skin, reddish pink colored eyelids and membranes of mouth, good layer of subcutaneous fat, clear eyes, smooth and glossy hair, good appetite and excellent general health which is recognized by stamina to work, regular meal time, sound sleep, normal elimination and resistance to disease.

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FOOD, NUTRITION & HEALTH - MALNUTRITION

- Malnutrition – undesirable kind of nutrition leading to ill health. It results from lack, excess or imbalance of nutrients in the diet. It includes both under and over nutrition. Under nutrition is a state of insufficient supply of essential nutrients.
- Malnutrition can be primarily due under nutrition or secondarily due to error in metabolism. The interaction between nutrients or nutrients and drugs used for treatment.

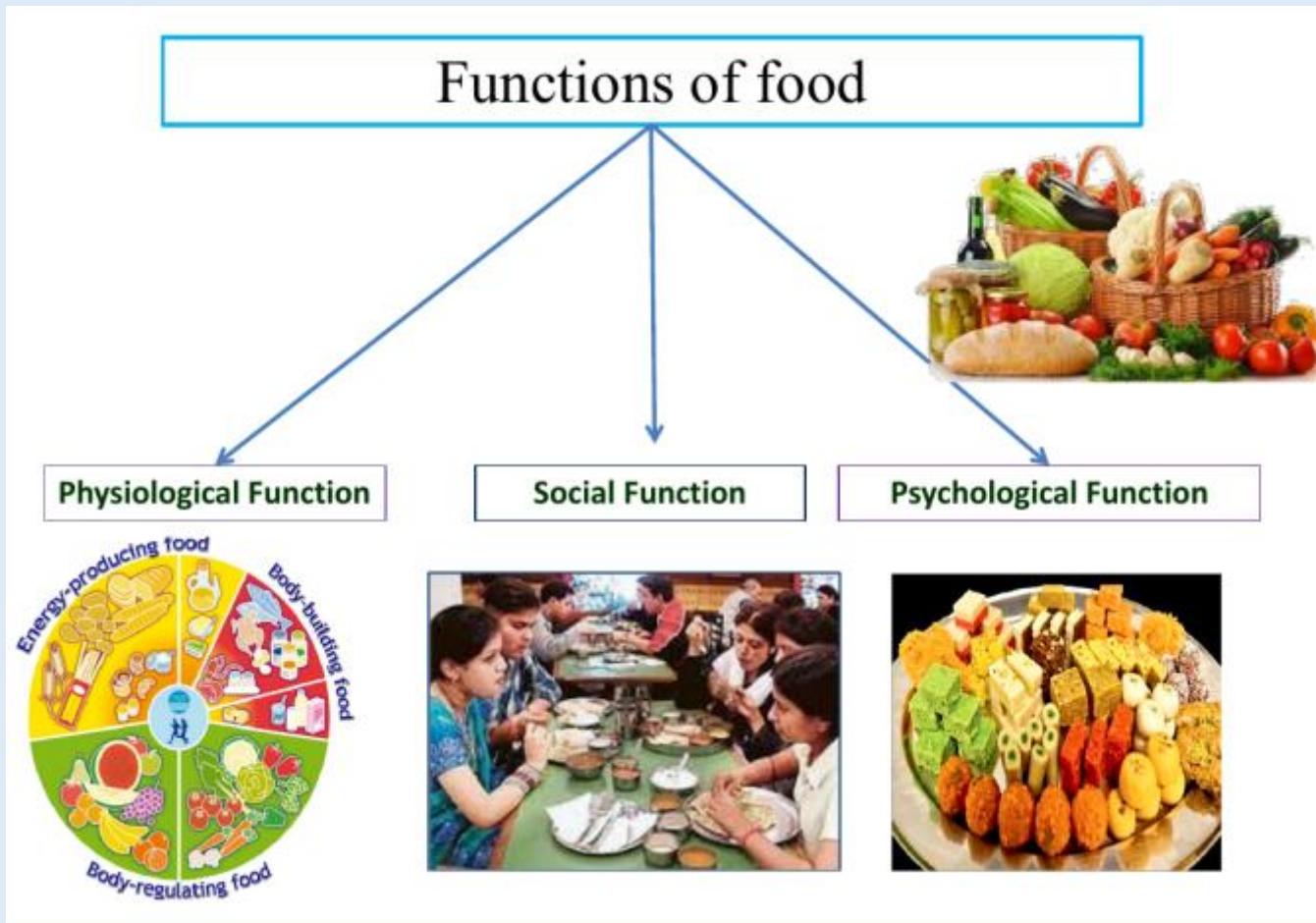
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FOOD, NUTRITION & HEALTH – OVER NUTRITION & DIET

- Over nutrition refers to an excessive intake of one or more nutrients which creates a stress on bodily functions.
- Diet – refers to what ever is eaten or drunk each day. It includes normal diet that is consumed either individually or in groups. Diets may be modified for making it suitable for sick individuals as a part of treatment – therapeutic diets

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FOOD, NUTRITION & HEALTH – FUNCTIONS OF FOOD



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FOOD, NUTRITION & HEALTH – FUNCTIONS OF FOOD - PHYSIOLOGICAL

- Food provides energy. Body needs energy to sustain involuntary processes essential for continuing life. It is also required for various activities like professional, household and recreational activities.
- Another important function is body building. Food eaten helps to maintain the body structure and helps in repair of worn out tissues
- Food regulates the activities of the body including – heart beat, maintaining body temperature, muscle contraction, water balance, blood clotting and removal of waste products from the body.
- Food helps in improving the immune system and improves resistance power of the body.

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FOOD, NUTRITION & HEALTH – FUNCTIONS OF FOOD - SOCIAL

- Food has always been the central part of our existence, social cultural and religious life.
- Special foods are distributed during religious functions in homes, temples, churches etc.
- Feasts are given in different stages of life like birth, cradle ceremony, birthdays, marriages etc. many feasts call for feeding specific segment of people.
- Certain menus are associated with specific foods in each region.
- Food has been used as expression of love friendship and social acceptance
- Food is also used to express happiness like success in exams, job, marriages, birth of a baby etc.
- Food for get togethers, meetings or functions should be planned in a proper manner to bring people together.

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FOOD, NUTRITION & HEALTH – FUNCTIONS OF FOOD - PSYCHOLOGICAL

- In addition to physical and social needs, food must satisfy certain emotional needs.
- It includes a sense of security, love and attention.
- Familiar foods usually make us feel secure.
- Sharing of food is a token of friendship and acceptance.
- In a friendly gathering we try unfamiliar foods and thus enlarge our food experiences.
- Anticipating needs and fulfilling these are expressions of love and attention.
- These sentiments are the basis of the normal attachment to mother's cooking or home food.
- If the foods included are unfamiliar or not tasty, then even nutritionally balanced foods may not be satisfactory.
- Planning meals must be such that it is nutritionally adequate and also enjoyable.

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Nutritional Guidelines for Good Health and Wellbeingness - Fruits and Vegetables (WHO)

Eating at least 400 g, or five portions, of fruit and vegetables per day reduces the risk of NCDs(Non Communicable Diseases) and helps to ensure an adequate daily intake of dietary fibre.

Fruit and vegetable intake can be improved by:

- Always including vegetables in meals;
- Eating fresh fruit and raw vegetables as snacks;
- Eating fresh fruit and vegetables that are in season; and
- Eating a variety of fruit and vegetables.

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Nutritional Guidelines for Good Health and Wellbeingness - FATS (WHO)

Reducing the amount of total fat intake to less than 30% of total energy intake helps to prevent unhealthy weight gain. The risk of developing NCDs is lowered by :

- Reducing saturated fats to less than 10% of total energy intake;
- Reducing trans-fats to less than 1% of total energy intake; and
- Replacing both saturated fats and trans-fats with unsaturated fats.

The Saturated fat and industrially-produced trans-fat intake, can be reduced by:

- Steaming or boiling instead of frying when cooking.
- Replacing butter and ghee with oils rich in polyunsaturated fats (soybean or sunflower oils).
- Eating reduced-fat dairy foods and lean meats, or trimming visible fat from meat.
- Limiting the consumption of baked and fried foods, and pre-packaged snacks and foods (e.g. doughnuts, cakes, pies, cookies, biscuits and wafers) that contain industrially-produced trans-fats.

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Nutritional Guidelines for Good Health and Wellbeingness - SALTS (WHO)

Most people consume too much sodium through salt around 9–12g per day and not enough potassium (less than 3.5 g). High sodium intake and insufficient potassium intake contribute to high blood pressure, which in turn increases the risk of heart disease and stroke.

- Salt intake to the recommended level of less than 5 g per day.
- Not having salt or high-sodium sauces and condiments on the table.
- Limiting the consumption of salty snacks.
- Choosing products with lower sodium content.
- People should be encouraged to check nutrition labels to see how much sodium is in a product before purchasing or consuming it.
- Potassium can mitigate the negative effects of elevated sodium consumption on blood pressure. Intake of potassium can be increased by consuming fresh fruit and vegetables.

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Nutritional Guidelines for Good Health and Wellbeingness - SUGARS (WHO)

In both adults and children, the intake of free sugars should be reduced to less than 10% of total energy intake. A reduction to less than 5% of total energy intake would provide additional health benefits

Consuming free sugars increases the risk of dental caries (tooth decay). Excess calories from foods and drinks high in free sugars also contribute to unhealthy weight gain, which can lead to overweight and obesity.

- Limiting the consumption of foods and drinks containing high amounts of sugars, such as sugary snacks, candies and sugar-sweetened beverages (i.e. all types of beverages containing free sugars – these include carbonated or non-carbonated soft drinks, fruit or vegetable juices and drinks, liquid and powder concentrates, flavoured water, energy and sports drinks, ready-to-drink tea, ready-to-drink coffee and flavoured milk drinks).
- Eating fresh fruit and raw vegetables as snacks instead of sugary snacks.

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Obesity and overweight disorders and its management

Being overweight or obese are both terms for having more body fat than what is considered healthy. These terms are used to identify people who are at risk for health problems from having too much body fat. However, the term "obese" generally means a much higher amount of body fat than "overweight."

The more body fat one has, the greater the risk for diabetes, kidney disease, heart disease, and other medical conditions.

The signs of overweight and obesity are

- Very High Body Mass Index (BMI).
- Unhealthy body fat distribution.
- Not enough sleep.
- High amounts of stress.

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Obesity and overweight disorders and its management

Body Mass Index (BMI)

- BMI is calculated from your height and weight.
- International System of Units (SI) : $BMI = \frac{weight(kg)}{(heightin(m))^2}$.
- Imperial System : $BMI = \frac{weight(lb)}{(height(inches))^2} \times 703$

| BMI | Weight Status |
|--------------|----------------|
| Below 18.5 | Under Weight |
| 18.5 to 24.9 | Normal Weight |
| 25 to 29.9 | Over Weight |
| 30 to 35 | Obese |
| Over 35 | Morbid Obesity |

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Obesity and overweight disorders and its management

What causes obesity and overweight?

- The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended.
- An increased intake of energy-dense foods that are high in fat and sugars.
- An increase in physical inactivity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization.
- Endocrinal abnormalities.

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Obesity and overweight disorder: Complications

- Type 2 diabetes
- High blood pressure
- Heart disease
- Stroke
- Sleep apnea
- Metabolic syndrome
- Fatty liver diseases
- Osteoarthritis
- Kidney disease
- Gallbladder disease
- Emotional and Social problems

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Obesity and overweight disorder: Treatments

- Healthy eating plan and regular physical activity.
- Weight-management programs : lose weight or keep from regaining lost weight.
- Medication
- Weight-loss devices : Gastric Band, Gastric Balloon Systems, Gastric Emptying Systems.
- Weight-management devices : Oral Removable Palatal Space Occupying Device, Ingested, Transient, Space Occupying Device.
- Bariatric surgery.

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Eating Disorders

Disorder is An illness that disrupts normal physical or mental functions



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Eating Disorders

Eating disorders are a range of psychological conditions that cause unhealthy eating habits to develop. They might start with an obsession with food, body weight, or body shape.

The types of Eating Disorders are

- ① Anorexia Nervosa
- ② Bulimia Nervosa
- ③ Binge eating disorder
- ④ Pica
- ⑤ Ruminination disorder
- ⑥ Avoidant/restrictive food intake disorder
- ⑦ Other disorders: Purging Disorder, Night Eating syndrome

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Eating Disorders : 1. Anorexia Nervosa

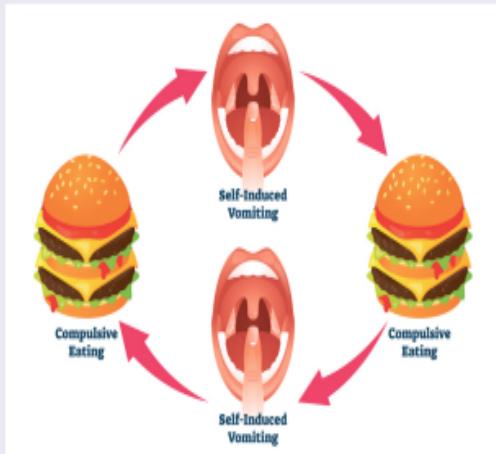
Common symptoms of anorexia nervosa include

- Being considerably underweight compared with people of similar age and height very restricted eating patterns
- An intense fear of gaining weight or persistent behaviours to avoid gaining weight, despite being underweight
- A relentless pursuit of thinness and unwillingness to maintain a healthy weight
- A heavy influence of body weight or perceived body shape on self-esteem
- A distorted body image, including denial of being seriously underweight
- Serious weight loss: 15% below the normal weight (BMI is ≤ 17.5)
- The weight loss is induced by avoidance of fattening foods.
- Amenorrhea in women and loss of sexual interest in men
- Use excessive exercise or appetite suppressants.

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Eating Disorders : 2. Bulimia Nervosa

Common symptoms of Bulimia Nervosa include



- Alternating periods of starvation Use appetite suppressants
- There is a self-perception of being too fat with a fear of too fat.

- Recurrent episodes of overeating in which large amounts of food are consumed in short periods of time.
- Persistent preoccupation with eating, and a strong desire or a sense of compulsion to eat (craving)
- Counteract the “fattening effect’ perception by Self-induced vomiting and other Common purging behaviours include fasting, laxatives, diuretics, enemas, and excessive exercise.

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Eating Disorders : 3. Binge Eating Disorder

Common symptoms of Binge Eating Disorder

- Eating large amounts of foods rapidly, in secret and until uncomfortably full, despite not feeling hungry
- Persistent preoccupation with eating, and a strong desire or a sense of compulsion to eat (craving)
- Counteract the “fattening effect’ perception by Self-induced vomiting and other Common purging behaviours include fasting, laxatives, diuretics, enemas, and excessive exercise.
- feeling a lack of control during episodes of binge eating feelings of distress, such as shame, disgust, or guilt, when thinking about the binge eating behavior
- No use of purging behaviours, such as calorie restriction, vomiting, excessive exercise, or laxative or diuretic use, to compensate for the binging

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Eating Disorders : 4. Pica

Pica disorder highlights

- Pica is another eating disorder that involves eating things that are not considered food.
- Individuals with pica crave non-food substances, such as ice, dirt, soil, chalk, soap, paper, hair, cloth, wool, pebbles, laundry detergent, or cornstarch.
- Pica can occur in adults, as well as children and adolescents. That said, this disorder is most frequently observed in children, pregnant women, and individuals with mental disabilities

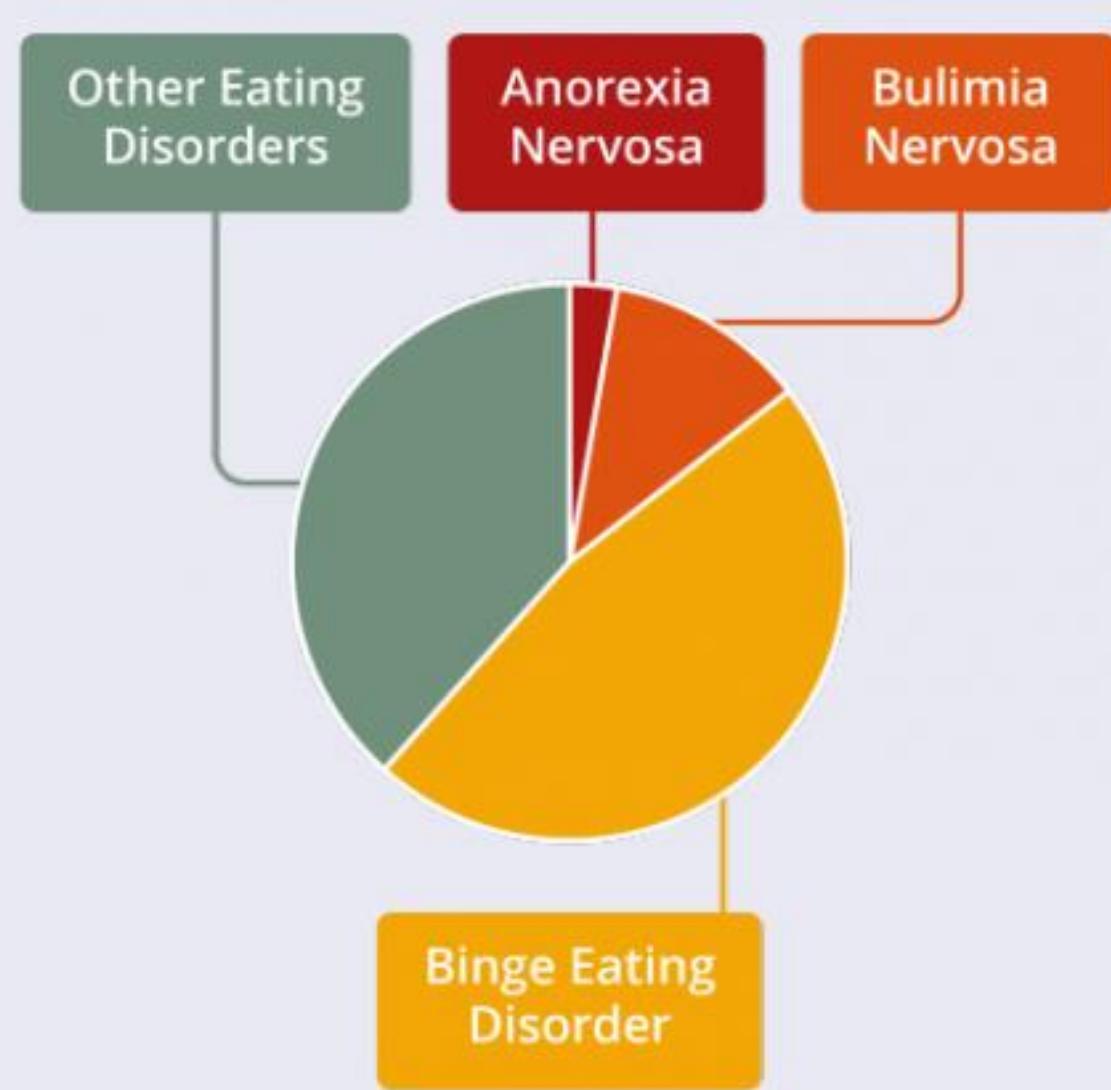
Eating Disorders : 5. Rumination disorder

Rumination disorder condition

- Rumination disorder can affect people at all stages of life. People with the condition generally regurgitate the food they've recently swallowed. Then, they chew it again and either swallow it or spit it out.

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Eating Disorders Occurrence



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Who suffers from eating disorders?

- Eating disorders are most common in teenagers or young adults, but can also affect almost anyone.
- Higher in females than males (males almost half of females)
- People of all ages, backgrounds, body weights, and ethnicity can be affected by eating disorders.
- Although common in teenage women, men and boys can also be vulnerable.
- People sometimes have eating disorders without their families or friends ever suspecting that they have a problem.
- Aware that their behaviour is abnormal, people with eating disorders may withdraw from social contact, hide their behaviour, and deny that their eating patterns are problematic.

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Physical activity recommended by WHO Adults 18 to 65 years

- At least 150 minutes of moderate-intensity physical activity or at least 75 minutes of vigorous-intensity physical activity or an equivalent combination throughout the week.
- Physical activity includes leisure time physical activity (walking, dancing, gardening, hiking, swimming), transportation (e.g. walking or cycling), occupational (work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities.
- For additional health benefits, adults should increase their moderate-intensity physical activity to 300 minutes per week, or at least 75 minutes of vigorous-intensity physical activity throughout the week or an equivalent combination of moderate- and vigorous- intensity activity.
- Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.
- Aerobic activity should be performed in bouts of at least 10 minutes duration.

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Types of Physical Activities - Moderate- intensity physical activity

Requires a moderate amount of efforts and accelerates the heart rate.

- Brisk walking
- Dancing
- Gardening
- House work and domestic chores
- Water aerobics
- Bicycling slower than 10 miles per hour
- General building tasks (roofing, thatching, painting)
- Active involvement in games/ sports with children/ walking domestic animals
- Carrying/ moving moderate loads (<20kg)

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Types of Physical Activities - Vigorous-intensity Physical activity

Requires a large amount of efforts with rapid breathing and substantial increase in heart rate.

- Race walking, jogging, or running, Walking/ climbing briskly up a hill
- Fast swimming
- Aerobics
- Fast Bicycling
- Jumping rope
- Heavy gardening (continuous digging)
- Hiking uphill or with a heavy backpack
- Competitive sports and games (traditional games, football, volleyball, hockey, basketball)
- Carrying /shifting heavy loads (>20 kg)

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Fitness Components of Health

A well-balanced exercise activities address all health-related components of fitness.

- ① Body composition : It is the amount of fat mass compared to lean muscle mass, bone and organs.
- ② Flexibility: is the ability of each joint to move through the available range of motion for a specific joint.
- ③ Muscular strength :It is the amount of force a muscle can produce. Examples would be the bench press, leg press or bicep curl.
- ④ Muscular endurance :It is the ability of the muscles to perform continuous without fatiguing. Example: The sit up test is most often used to test muscular endurance.
- ⑤ Cardio-respiratory endurance :It is the ability of the heart and lungs to work together to provide the needed oxygen and fuel to the body during sustained workloads. Examples would be jogging, cycling and swimming, Cooper Run.

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Wellness and Physical Function

- Physical function is the ability to perform both basic and instrumental activities of daily living, and the ability of older adults to reside in the community depends to a large extent on their level of physical function.
- Being active helps maintain healthy bones, muscles and joints. Physical activity decreases the risk of some health problems such as heart disease, stroke, diabetes, and high blood pressure. Exercising helps reduce feelings of anxiety and depression, helps prevent and manage stress, and promotes mental well-being.
- Physical wellness is the ability to maintain a healthy quality of life that allows us to get through our daily activities without undue fatigue or physical stress.
- The physical component of wellness involves the ability to carry out daily tasks, develop cardio respiratory and muscular fitness, maintain adequate nutrition and a healthy body fat level, get adequate sleep, and avoid abusing alcohol and other drugs or using tobacco products.

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thank
you