

# Seminar: Obesity prevention (F6)

Objectives:-

1. Describe the **burden** of disease of obesity, causation factors, in Saudi Arabia.
2. Present **global strategy** on diet, physical activity and health.
3. Identify the **programs for prevention and control** for those problems in Saudi Arabia.
4. Demonstrate **counselling skills** for dietary advice, and obesity reduction using scenarios.

## **Introduction:**

- Obesity results from accumulation of body fats overtime.
- It occurs when the energy intake exceeds energy requirements.
- It is a key risk factor for many non-communicable diseases (NCDs), including type 2 diabetes, hypertension, heart disease and some cancers.
- Obesity can be assessed and determined by calculating the “body mass index” (BMI) using the formula:-

$$\text{weight (kg) / [height (m)]}^2$$

- The value of the BMI can sub classify obesity into different grades.
- For adults, WHO defines overweight and obesity as follows: overweight is a BMI greater than or equal to 25; and obesity is a BMI greater than or equal to 30.
- For children, age needs to be considered when defining overweight and obesity.
- Other obesity measurement methods include: waist circumference and body fat composition.

## **The burden of disease of obesity, causation factors, in Saudi Arabia:**

- **Prevalence of obesity worldwide:**

According to WHO, the worldwide prevalence of obesity nearly tripled between 1975 and 2016. In 2016, more than 1.9 billion adults aged 18 years and older were overweight. Of these over 650 million adults were obese. Over 340 million children and adolescents aged 5-19 were overweight or obese in 2016. 39 million children under the age of 5 were overweight or obese in 2020. Obesity was thought to be a problem of the high-income countries, but now it is on the rise in low- and middle-income countries, particularly in urban settings. In Africa, the number of overweight children under 5 has increased by nearly 24% percent since 2000. Almost half of the children under 5 who were overweight or obese in 2019 lived in Asia. Overweight and obesity are linked to more deaths worldwide than underweight.

- **Burden of obesity worldwide:**

The Global Burden of Disease Study and the WHO have recently documented that obesity is indeed a major contributor to ill-health, disability and mortality in many regions of the world. The increase in obesity worldwide has an important impact on health impairment and reduced quality of life. In particular, obesity has an important contribution to the global incidence of cardiovascular disease, type 2 diabetes mellitus, cancer, osteoarthritis, work disability and sleep apnea.

Obesity is associated with increases in annual health-care costs of 36% and medication costs of 77% compared with being of average weight. This is direct healthcare cost. In long term economic consequences of obesity on the Individual, it appears to influence school attendance, level of education, earning ability, and social interactions. overweight or obese were more often the victims of rumors/ lies, name-calling, teasing, physical abuse, and isolation.

- **Prevalence of obesity in Saudi Arabia:**

In Saudi Arabia, obesity has become one of the most common public health problems and it is more prevalent in Saudi women than in Saudi men. According to Saudi Health Interview Survey (SHIS) conducted in 2013, obesity and overweight affect 28.7% and 30.7% of adults respectively (collectively overweight and obesity affect 59.4% of the total population). The prevalence of obesity among adult males and females was 24.1% and 33.5% respectively, while 33.4% adult males and 28.0% females were overweight.

- **Burden of obesity in Saudi Arabia:**

A study published in 2022 found that the estimated annual direct medical cost of excess weight (overweight and obesity combined) is \$3.8 billion in Saudi Arabia, and that type 2 diabetes is by far the largest cost driver. A study in 2021 concluded that obesity was significantly associated with T2DM, hypercholesterolemia, hypertension, rheumatoid arthritis, sleep apnea, colon diseases, and thyroid disorders. In a study, 39.1% of men who have BMI of 30-34.9 have diabetes while 33.4% of women with the same BMI were diabetic. A study found that 41.7% of the obese participants have moderate to severe depression. Also, a study found that more than 90.53% of the patients referred with osteoarthritis of the knees

were obese or overweight. a study found that 32.2% of obese women were Hypertensive whereas 22.1% of obese men were hypertensive. co-existence of obesity with other diseases may increase the burden of disease on individuals and lower their disease management outcomes.

- **Factors associated with obesity:**

During the past few decades, Saudi Arabia experienced a major lifestyle transition accompanied by rapid economic growth and technological transformation. Consequently, physical inactivity, sedentary behaviors, and consumption of calorie dense diets and sugar sweetened beverages increased and became prevalent among the Saudi people. This has definitely contributed to an increase in lifestyle related NCDs in the country, including obesity.

Below, we will discuss some of the in Saudi Arabia.

- **Poor dietary habits:**

High calorie diet , overeating, additional meals, snacking, and sweets , fast food and soft drink all are crucial factors for the development of obesity.

- **Sedentary lifestyle and physical inactivity:**

Sedentary lifestyle is a common contributor to development of obesity.

Working a desk job, extensively watching TV and playing video games ,rarely taking regular exercise, driving and using a computer or phone for several hours are all sedentary activities.

However, during the COVID-19 pandemic, the sedentary activities increased , Such as spending a lot of time on computers and phones due to online teaching in schools or working from home and access to physical activity resources, including recreation places, gyms, and sports, have been limited.

- **Genetics:**

Studies showed obesity has a strong genetic component. Children of parents with obesity are much more likely to have obesity .

- **Low level of education:**

Many studies showed obesity is inversely associated with the level of education, More advanced the level of education the less likely the presence of obesity.

- **Poor sleep quality:**

Multiple reports suggest the duration of sleep is an independent risk factor for obesity in all age groups . Studies have shown that sleep is an important regulator of many biological and physiological functions, such as appetite, energy balance, and weight maintenance, and that control of body weight and nutrient metabolism are greatly affected by the number of hours of sleep. Both short and long periods of habitual sleep are linked to obesity . Short sleep duration can lead to a reduction in the satiety hormone leptin and an increase in the hunger hormone ghrelin that causes an increase in appetite .

### **Global strategy on diet, physical activity and health (DPAS):**

After Recognizing the heavy and growing burden of non communicable diseases Member States requested the Director-General to develop a global strategy on diet, physical activity and health through a broad consultation process. The adoption of the strategy comes at a critical time in which countries have a relatively short period to intervene and act before the disease burden and human and economic costs of diseases, such as cardiovascular diseases, will be out of control. This is particularly true for developing countries.

The overall goal of the Global Strategy on Diet, Physical Activity and Health is to promote and protect health by guiding the development of an enabling environment for sustainable actions at individual, community, national and global levels that, when taken together, will lead to reduced disease and death rates related to unhealthy diet and physical inactivity. These actions support the United Nations Millennium Development Goals and have immense potential for public health gains worldwide.

The Global Strategy has four main objectives:

1- to reduce the risk factors for noncommunicable diseases that stem from unhealthy diets and physical inactivity by means of essential public health action and health-promoting and disease-preventing measures.

2- to increase the overall awareness and understanding of the influences of diet and physical activity on health and of the positive impact of preventive interventions.

3- to encourage the development, strengthening and implementation of global, regional, national and community policies and action plans to improve diets and increase physical activity that are sustainable, comprehensive, and actively engage all sectors, including civil society, the private sector and the media.

4- to monitor scientific data and key influences on diet and physical activity; to support research in a broad spectrum of relevant areas, including evaluation of interventions; and to strengthen the human resources needed in this domain to enhance and sustain health.

Risk factors for noncommunicable disease frequently coexist and interact. As the general level of risk factors rises, more people are put at risk. Preventive strategies should therefore aim at reducing risk throughout the population. Such risk reduction, even if modest, cumulatively yields sustainable benefits, which exceeds the impact of interventions restricted to high-risk individuals. Healthy diets and physical activity, together with tobacco control, constitute an effective strategy to contain the mounting threat of noncommunicable diseases.

Reports of international and national experts and reviews of the current scientific evidence recommend goals for nutrient intake and physical activity in order to prevent major noncommunicable diseases. These recommendations need to be considered when preparing national policies and dietary guidelines, taking into account the local situation.

For **diet**, recommendations for populations and individuals should include the following:

- achieve energy balance and a healthy weight
- limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated fats and towards the elimination of trans-fatty acids
- increase consumption of fruits and vegetables, and legumes, whole grains nuts
- limit the intake of free sugars
- limit salt (sodium) consumption from all sources and ensure that salt is iodized.

**Physical activity** is a key determinant of energy expenditure, and thus is fundamental to energy balance and weight control.

Physical activity **reduces** risk for cardiovascular diseases and diabetes and has substantial benefits for many conditions, not only those associated with obesity.

The beneficial effects of physical activity on the metabolic syndrome are mediated by mechanisms beyond controlling excess body weight. For example, physical activity reduces blood pressure, improves the level of high density lipoprotein cholesterol, improves control of blood glucose in overweight people, even without significant weight loss, and reduces the risk for colon cancer and breast cancer among women.

It is recommended that individuals engage in adequate level of physical activity throughout their lives. Different types and amounts of physical activity are required for different health outcomes:

- at least 30 minutes of regular, moderate-intensity physical activity on most days reduces the risk of diseases.
- Muscle strengthening and balance training can reduce falls and increase functional status among older adults.
- More activity may be required for weight control.

The realization of these recommendations, together with effective measures to prevent and control tobacco use, in the Global Strategy that leads to regional and national action plans, will require sustained political commitment and the collaboration of many stakeholders. The Strategy will contribute to the effective prevention of noncommunicable diseases and sustained improvements in people's health.

## **The programs for prevention and control of obesity in Saudi Arabia:**

Introduction to the obesity control program :

A comprehensive, systemic multi-sectoral program comprising of multiple interventions involves and includes broad behavioral change component is required to produce positive impact in managing obesity among the population. Physical activity and nutritional behavior are a vital part of any obesity control program. This necessitates the development of multi-setting programs (e.g. schools and work-places). Prevention efforts should also invest in, and target all age groups and individuals with parental and/or family involvement.

- **Primary prevention of Obesity in Children, Adolescents, adults:**

- **Guidelines for healthy eating:-**

- 1. Birth to 5 years:**

- Recommend exclusive breastfeeding from birth up to the age of six months.
- Gradually introduce solid food starting at the age of six months
- Carefully introduce – one at a time- foods which may cause allergies such as milk, eggs, wheat, seeds, nuts, and shellfish
- Provide three meals and two between-meal snacks for children one year old.
- Avoid high fiber foods and large volumes of full fat dairy products in below two years children
- Introduce gradually, low fat dairy products, for normally growing above two years old children.
- Adjust salt intake to the age of the child; (less than 1 g/day up to age 12 months; from 1-3 years no more than 2 g/day and a maximum of 3 g/day for 4-6 year olds).

- 2. Children above 5 years and Adults:**

Recommend food in accordance with healthy eating guidelines from the age of five years onwards unless there is specific clinical dietary requirement. Adjust portion sizes to age, gender, weight and activity level:

- Encourage the child to eat to appetite.
- Encourage children to eat regular meals including breakfast
- Discourage availing easy access to foods not recommended for the child.

- Encourage intake of low salt foods and limit the intake of energy-dense foods and fast foods

- Follow the 5-2-1-0 message every day:

\* 5= Encourage intake of daily 5 portions of fruits and vegetables

\* 2= Encourage eating with the child in a sociable atmosphere without distractions, separate eating from other activities and keep recreational screen time to less than 2 hours

\* 1= Include at least 1 hour or more of active play every day (see physical activity section below).

\* 0= Skip sugar sweetened beverages, drink more water every day.

Advise patients using medications associated with weight gain on weight management

➤ **Guidelines for Physical activity:**

**1. Children:**

**For children under 5 years of age**

**In a 24-hour day, infants (less than 1 year) should:**

be physically active several times a day in a variety of ways, particularly through interactive floor-based play; more is better. For those not yet mobile, this includes at least 30 minutes in prone position (tummy time) spread throughout the day while awake; more is better; not be restrained for more than 1 hour at a time (e.g., prams/strollers, high chairs, or strapped on a caregiver's back).

**In a 24-hour day, children 1-2 years of age should:**

spend at least 180 minutes in a variety of types of physical activities at any intensity, including moderate- to vigorous-intensity physical activity, spread throughout the day; more is better; not be restrained for more than 1 hour at a time (e.g., prams/strollers, high chairs, or strapped on a caregiver's back) or sit for extended periods of time.

**In a 24-hour day, children 3-4 years of age should:**

spend at least 180 minutes in a variety of types of physical activities at any intensity, of which at least 60 minutes is moderate- to vigorous-intensity physical activity, spread throughout the day; more is better; not be restrained for more than 1 hour at a time (e.g., prams/strollers) or sit for extended periods of time.

**Children and adolescents aged 5-17 years**

should do at least an average of 60 minutes per day of moderate-to-vigorous intensity, mostly aerobic, physical activity, across the week.



should incorporate vigorous-intensity aerobic activities, as well as those that strengthen muscle and bone, at least 3 days a week.

## **2. Adults:**

### **Adults aged 18–64 years**

should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits. may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits.

should limit the amount of time spent being sedentary.

### **Adults aged 65 years and above**

Same as for adults; and as part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasises functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls.

- **Saudi Arabian Society For Metabolic And Bariatric Surgery:**

**What is SASMBS:** It is a committee that has been founded in 2010 which is under the support of health specialties

**Aim :** introduce guidelines related to overweight. These guidelines include healthy eating and physical activity. The society also treats and prevent obesity in children and adults in KSA

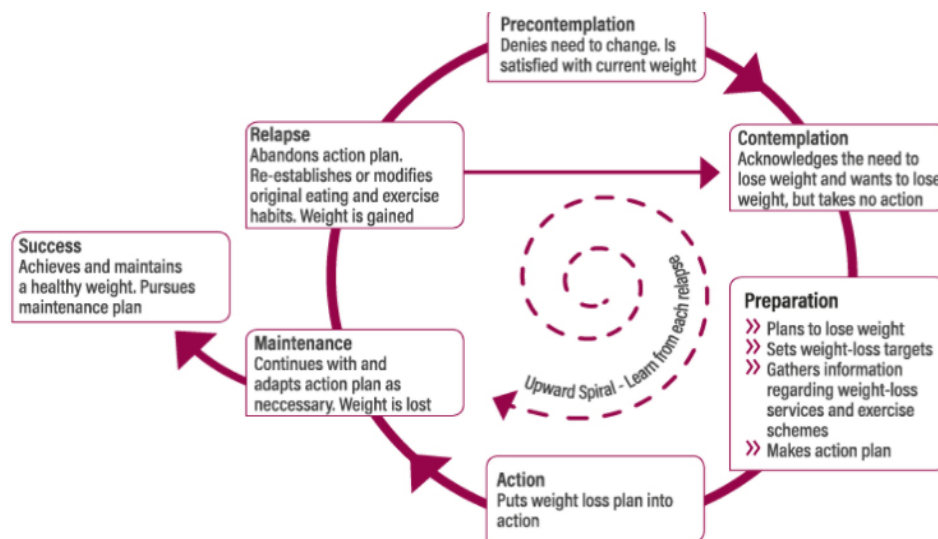
### **Counseling skills for dietary advice and obesity reduction:**

- **Scenario:**

A 50-year-old woman with obesity and a 9 year history of type 2 diabetes presents to you with complaints of fatigue, difficulty losing weight, and no motivation. On the physical exam, her height is 155 cm and her weight is 90 kg. Her blood pressure is 160/88 mmHg. The remainder of the physical exam is unremarkable. What are your plans for her?

- **Approach to scenario:**

First: We should have an idea about the **patient background (medical history)** by assessing the comorbidities of the patient. She has type 2 diabetes mellitus which is most probably caused by her obesity, she also suffers from a high blood pressure which can also be caused by her obesity and also under the context of her diabetes. Also we need to know what kind of food she eats, whether she is doing physical activity or not, her habits and lifestyle, and lastly we need to know **whether she is willing** to reduce her weight and change into a healthier lifestyle by applying **The Transtheoretical Model (Stages of Change)**:



- If she is **not showing** willingness to change: we have to encourage her by providing a better understanding of the disease itself.

- If the patient is **showing** willingness to change: we start calculate her BMI and see under which level of obesity the patient is settle on, according to the Saudi guidelines on the prevention and management of obesity:

- For adults with **BMI 25-35 kg/m<sup>2</sup>** the target is to lose **5-10%** of body weight (0.5-1 kg per week).

- For adults with **BMI > 35 kg/m<sup>2</sup> and obesity-related co-morbidities** the target is to lose a **greater than 15-20%** of body weight and the focus of lifestyle modification:

- **Diet:** Target energy deficit of 500-1000 kilo-calorie per day. dietary modification appropriate to the patient condition (type, quantity and/or frequency), Strictly supervise patients on very low calorie diets reduce intake of energy-dense foods.

- **Physical activity:** Prescribe a volume of physical activity that produces an energy deficit of approximately 1,800-2,500 kcal/week. This could be achieved through 5 sessions of 45-60 min/week of moderate intensity physical activity.

- **Psychological interventions:** should be part of any weight management program, It should be adjusted to the circumstances of the individuals or their families.

- **5As Model for behaviour change:**

5As model for behavioral changes is A unifying conceptual framework used on a one-to-one basis or in groups by health care professionals. The 5 A's are Assess, Advise, Agree, Assist and Arrange. Basically, these behavioral strategies encourage patients to engage in self-management and include:

- Establishing rapport with patients.
- Assessing patients' readiness to change a behavior to enable the health professionals to use appropriate behavioral change strategies.
- The "Problem-Solving Process" teaches patients a process to solve problems when they arise in their daily lives.
- Ensuring that "Follow-up" takes place facilitates the success of making action plans.

- **The progress towards achieving the desired goal:**

Devise strategies appropriate to specific individual situations to prevent or minimize weight regain in adults who successfully achieved weight loss:

- Healthy food.
- Physical activity.
- Cognitive-behaviour therapy.
- Consult health professionals if they observe a small amount of weight regain (approximately 3 kg).
- Encourage motivation for long-term weight management through approaches including self-management (e.g. manage hunger, reviewing goals, and regular self-weighing).

- **If there is no progress towards achieving this goal:**

Initially, we must reevaluate the patient and replan the lifestyle modifications to be made. After that, we can refer the patient to specialised services such as pharmacotherapy or bariatric surgery:

**1- Pharmacologic treatment** with lifestyle interventions on an individual case basis after assessment of risks and benefits:

- In obese adults (BMI  $\geq$  30 kg/m<sup>2</sup>) who failed to achieve or maintain weight loss with lifestyle modification program.
- In obese or overweight individuals (BMI  $\geq$  28 kg/m<sup>2</sup>) with co-morbidities.
- In pre-pubertal obese children Pharmacological therapy is generally not recommended, however, it can be considered only (treatment with Orlistat) under supervision of specialized team, if severe co-morbidities are present, e.g. orthopedic problems, sleep apnea, severe psychological disease or within the context of a supervised clinical trial.

### **Examples of pharmacotherapy treatment:**

The FDA has approved five of these drugs for long-term use.

- Orlistat (Xenical, Alli)
- Phentermine-topiramate (Qsymia)
- Naltrexone-bupropion (Contrave)
- Liraglutide (Saxenda)
- Semaglutide (Wegovy).

**2- Bariatric surgery:** considered when there is evidence of completion of a structured weight management program, not resulting in significant and sustained improvement in the comorbidities such as:

- In adults with clinically severe obesity (BMI  $\geq$  40 kg/m<sup>2</sup>)
- In adults with (BMI  $\geq$  35 kg/m<sup>2</sup>) and severe comorbidities.
- In adults with (BMI  $>$  30 kg/m<sup>2</sup>) with poorly controlled type 2 diabetes and are at increased cardiovascular risk.

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