Obesity Prevention

(Seminar Report)

Done By:

Abdullah Alburikan
439100773

Abdulaziz Alhamoudi
439100568

Abdullah Aldosari
439100426

Abdulrahman Almegbel
439100752

Faisal Alluhaidan
439100628

Majed Khalid Alotaibi
439100761

Mohammed Alturki
439100500

Saad Aldohaim
439100771

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 counseling skills for dietary advice, and obesity reduction using scenarios.

Disclaimer:

Important info mentioned by the doctor or thought to be important by us is marked with red.

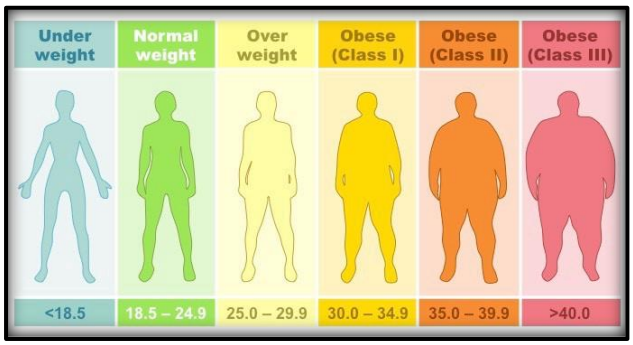
Please know that you should study the whole report as an exam question may come from any part of it.

INTRODUCTION

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health[1]. It results from accumulation of body fats overtime and occurs when the energy intake exceeds energy requirements. This could occur as a result of many factors including increased food intake, physical inactivity, and genetic factors[2,3].

Overweight and obesity can be determined using the many methods such as:

Body mass index (BMI) which is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m2)[1,4].



Waist Circumference which stems from the fact that abdominal obesity (accumulation of fatty tissue in the belly) is generally thought to be “worse” than accumulating fat elsewhere (such as the buttocks or thighs). This is because abdominal obesity correlates with an increased risk for not only cardiovascular disease, but also metabolic syndrome, hypertension, and diabetes[5]. a waist circumference of 102 cm or more in men, and of 88 cm or more in women, is associated with elevated cardiovascular risk[6].

The Waist-to-Hip Ratio which measures both waist and hip circumferences, then divide the waist measurement by the hip measurement. In women, the ratio should be 0.8 or less, and in men, it should be 1.0 or less[5]. The waist-to-hip ratio is helpful because in smaller people waist circumference alone may underestimate risk. But by comparing waist circumference to hip circumference, you can get a better indication of abdominal obesity, and studies have confirmed that this measure correlates with cardiovascular risk [7].

INTRODUCTION Cont.

Body Fat Percentage which is used by most dieticians to calculate the calorie requirement for the body. This method uses information like sex, weight, waist circumference, wrist circumference, hip circumference and forearm circumference to calculate body fat percentage. Ideally, the percentage should be less than 20%[8].
Doctors rely on a combination of these measures to advise patients on their weight related risk[5].

Obesity is considered a key risk factor for many non-communicable diseases (NCDs), including type 2 diabetes, hypertension, heart disease and some cancers. The risk increases with increase in the level of obesity, it is also strongly associated with mental health and eating disorders[3,9,10].

Objective No. 1

BURDEN OF OBESITY

The Burden of Obesity Worldwide:

Overweight and obesity were once considered a high-income country problem, but now it seems to be on the rise in low- and middle-income countries, particularly in urban settings. in 2016 The prevalence of overweight and obesity among children and adolescents aged 5-19 has risen dramatically from just 4% in 1975 to over 18%, 39% of adults aged 18 years and over (39% of men and 40% of women) were overweight, and about 13% of the world's adult population (11% of men and 15% of women) were obese. The worldwide prevalence of obesity nearly tripled between 1975 and 2016[4].

The Disability-Adjusted Life Years of Obesity:

Based on a study that was published on Jul 28 of 2020 the number of global deaths and DALYs attributable to high BMI has substantially increased between 1990 and 2017. The global DALYs attributable to high BMI have increased from 33.1 million in 1990 to 70.7 million in 2017 for females and increased from 31.9 million in 1990 to 77.0 million in 2017 for males[11].

The Burden of Obesity in Saudi Arabia:

In 2019 the Ministry of Health conducted a survey with a nationally representative sample of 10,000 households to monitor critical health outcomes, risk factors and health systems. Body mass index was one of the health indicators being investigated, and it revealed that less than half of respondents (40%) have normal BMI, and the prevalence of overweight and obesity are 38% and 20%, respectively. The survey also revealed that the percentage of obesity in Saudi Arabia increases with age, from 10% in the age group 18-29, to 29% in the age group 70-79, before falling to 22% in respondents 80+ years. The percentage of overweight is higher in males (43%) than females (33%) while the percentage of obesity is higher in females (21%) than males (19%)[12].

BURDEN OF OBESITY Cont.

Causes of Obesity:

Obesity is most commonly caused by imbalance between excess energy consumption (dietary intake) and energy expenditure (energy loss through metabolic and physical activity). However, the etiology of obesity is complex and multifactorial. So factors interact with each other to develop obesity[13]. These factors are:

- **Genetics:** the role of genetic predisposition of obesity could be through single gene mutation (leptin, leptin receptor, pro-opiomelanocortin, peroxisome proliferator-activated receptor-γ) ,as a syndrome with obesity as part of clinical feature (Prader-Willi, Wilson-Turner) or through association and linkage studies (Families, Twins)[14].

- **Diet:** The food environment has become in ways that promote overeating of high caloric and fat laden foods, for example numerous fast food restaurants, vending machines of energy dense items in schools and offices make reaching to this type of food easy[13].

- **Physical Activity:** Has dramatically decreased in the last decades. This can be due to less access to physical activity (sidewalks), poor education for the community about the importance of physical activity and more time is spent on sedentary lifestyles such as playing video games, watching tv and sitting on phones[13].

- **Certain Medications:** Weight gains also can be caused by other factors like diabetic medication, steroid hormones, contraceptives.

- **Psychological:** such as (Covid-19) which causes deterioration of psychological health resulting in chronic stress and altered eating behavior which lead to perturbed energy homeostasis that eventually can cause obesity[15].

- **Other:** Neuroendocrine Diseases (Cushing Syndrome, Hypothyroidism) or Pregnancy[16]. Social, economic, and even political factors can help in causing obesity[13].

Objective No. 2

GLOBAL STRATEGY[17]

What is the global strategy and what does it address?

After recognizing the burden of obesity, the World Health Organization (WHO) has decided to develop an international strategy to limit the burden. Two main risk factors are known for non-communicable diseases which are **diet** and **physical exercise**. The strategy targeted those two risk factors specifically.

The main purpose of the global strategy is to promote and protect health by creating an enabling environment at all levels, including individual, national, and global levels, which will in turn lead to a reduction in disease and death caused by poor diet and physical activity. This strategy has 4 objectives that work together to achieve this goal:

1. Increase the overall awareness of the influence of diet and physical activity on health.
2. Take health-prevention-and-promotional measures to reduce the risk of noncommunicable illnesses caused by a poor diet and lack of physical exercise.
3. Encourage the development and implementation of policies and national plans across all levels to improve diet and physical activity.
4. Monitor and support research and scientific data and key influences on the many relevant areas that affect diet and physical activity.

First, regarding diet, there are certain recommendations for the population. These recommendations need to be considered when preparing national policies and dietary guidelines considering the local situation. They include the following:

- Achieve energy balance and healthy weight
- Limit fat intake
- Increase fruits and vegetables
- Limit the intake of free sugars
- Limit salt (sodium) consumption

Objective No. 2

GLOBAL STRATEGY[17] Cont.

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 such as:

- Reduction of blood pressure
- Improvement of the level of high-density lipoprotein cholesterol
- Improvement of control of blood glucose in overweight people, even without significant weight loss
- Reduction of the risk for colon cancer and breast cancer among women

It is recommended that individuals engage in adequate levels 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 cardiovascular disease and diabetes, colon cancer and breast cancer.
- Muscle strengthening and balance training can reduce falls and increase functional status among older adults.
- More activity may be required for weight control.

There had to be particular principles to operate on in order to build those strategies and recommendations. The action principles are as follows:

- Based on scientific evidence
- A life-course perspective
- It’s a public health effort
- Priority to poorest populations
- Sensitive to the differences in gender
- Should be culturally appropriate

Objective No. 3

PROGRAMS FOR PREVENTION AND CONTROL[18]

What Is an 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.
- The vital part of any obesity control program is Physical activity and nutritional behavior.
- 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 and Adults:

For all age groups we need to assess diet , physical activity and sedentary behavior annually.

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.
- Introduce gradually, low fat dairy products, for normally growing above two years old children.

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.

PROGRAMS FOR PREVENTION AND CONTROL[18] Cont.

- 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.

Guidelines for Physical Activity:

1. Children:

- Encourage children gradually to perform at least 60 minutes of moderate to vigorous exercise daily – continuous or accumulated in short bouts.
- Encourage children to lead active daily life such as walking, cycling, skipping and using the stairs and support them to practice regular physical activity appropriate to their age and ability such as football and swimming.
- Discourage sedentary behavior of more than two hours for children particularly of screen time, like watching TV, computer use and playing video games.
- Encourage family approach to physical exercise (e.g. walking and cycling to school and shops, going to the park or for swimming).

2. Adults:

- Provide physical activity advice appropriate to specific individual situations.
- The focus should be on activities that can fit easily into their everyday lives are tailored to their individual preferences and circumstances. Attention should be given to pregnant women, those at risk of postnatal weight retention, women reaching the age of menopause, or while quitting smoking.
- Inform the individuals about the benefits of physical activity on reducing the risk of cardiovascular disease (CVD) and type 2 diabetes, even without evident weight reduction.
- Encourage adults to do at least 30 minutes of moderate-intensity physical activity on 5 or more days a week. This should be built up over time; start by walking 10 minutes a day on a few days during the rest couple of weeks then add more time and days gradually.

PROGRAMS FOR PREVENTION AND CONTROL[19] Cont.

Rashaka is a school-based obesity control program in Saudi Arabia with the aim to promote an active lifestyle and reduce obesity among students.

It is the result of a partnership between the Health Ministry, the Education Ministry, and it targets students, parents and teachers.

Examples of initiatives Saudi Arabia made to reduce obesity:

- 100% and 50% tax rate on energy drinks and soft drinks, respectively.
- Mandatory display of calories on restaurant menus.
- Under the “Regulations of Health Conditions for School Canteens” developed by the Ministry of Education there are several foods banned in school canteens, including sweetened drinks, confectionaries, and fried foods.

Objective No. 4

COUNSELING SKILLS[18,19]

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 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?

We should apply the "5 As Model" for behaviours change:
The 5 steps of the "5 As model" are Ask, Assess, Advise, Agree and Assist:

1. **Ask** to obtain permission to discuss the patient's weight at the same time not judging the patient and also check if the patient is ready to make a change.

We can assess readiness to change by evaluating the patient's stage:

Stage	Intervention
Pre-contemplation (No intention to change)	Build awareness to the need to change
Contemplation (There is intention to change)	Increase pros for change and decrease cons
Preparation	Commit and plan
Action	Implement and revise the plan
Maintenance	Integrate change into lifestyle

2. **Assess** patient's comorbidities, BMI, Waist circumference and obesity stage.
   - She has type 2 diabetes mellitus and hypertension
   - Her BMI is 37.5 kg/m2 which is obesity Class II (According to BMI)
   - We need to use more measure such as waist-to-hip ratio and Body Fat Percentage
   - We also need to assess her eating habits, physical activity and lifestyle habits

3. **Advice** on health risks of obesity, benefits of healthy weight loss, the need for a long term plan and treatment options.
   - Type 2 diabetes mellitus it is most likely caused by her obesity as type 2 diabetes mellitus and obesity have a strong correlation.
   - Hypertension could also be caused by obesity.
   - According to the Saudi guidelines on the prevention and management of obesity, the target for an adult patient with a BMI of more than 35 kg/m2 is to reduce their body weight by 15-20%.
   - This could be achieved by lifestyle modifications such as diet and physical activity. Additionally, we can use pharmacotherapy or surgical interventions.

COUNSELING SKILLS[18,19] Cont.

4. **Agree** to have realistic expectations and goals, behavior change using the SMART framework and specific details regarding treatment options.

Specific	The goal is to lose 18kg
Measurable	The goal was based on Saudi guidelines on the prevention and management of obesity
Attainable	The goal is reasonable and can be achieved
Relevant	The main concern is wight loss to control obesity.
Time Bound	We can set a realistic ambitious end date for the patient

5. **Assist** in identifying barriers and addressing them, also arrange a regular follow up plan.

If there is no progress towards achieving the goal, we should re-evaluate the patient and refer the patient to a specialized services for pharmacotherapy or surgical interventions.

Pharmacotherapy: consider adding pharmacological agent with lifestyle interventions on an individual case basis after assessment of risks and benefits**.** Currently there is a list of medications used for pharmacological treatment of obesity, although there is not enough evidence regarding the efficacy of different drugs. Examples of such drugs:

- Serotonin 2C receptor agonist
- Opioid antagonist and amino ketone antidepressant.
- GLP-1 receptor agonist.

Surgical Interventions: consider bariatric surgery as part of an overall clinical pathway for adult weight management. Like pharmacological treatment it should be assessed on individual cases after considering the risks and benefits of bariatric surgery.

When to perform bariatric surgery?

In adults with clinically severe obesity (BMI>40).
Adults with a BMI>35 and severe comorbidities.
In adults with a BMI>30 who also have poorly controlled type 2 diabetes mellitus.

REFERENCES

1. *World Health Organization (WHO). Obesity*
2. *World Health Organization (WHO). Obesity: Preventing and Managing the Global Epidemic. Report on a WHO Consultation*. Geneva: WHO; 2000. (WHO technical report series 894).
3. The Scottish Government. *Preventing Overweight and Obesity in Scotland: A Route Map towards Healthy Weight*. Edinburgh: The Scottish Government, 2010.
4. *World Health Organization (WHO). Obesity and overweight*
5. *BMI, Waist Circumference, or Waist-To-Hip Ratio? Which Is Best for Assessing Cardiac Risk?*
6. Zhang C, Rexrode KM, Van Dam RM, Li TY, Hu FB. *Abdominal obesity and the risk of all-cause, cardiovascular, and cancer mortality: Sixteen years of follow-up in US women.* Circulation. 2008;117(13):1658–67.
7. Thu Tran NT, Blizzard CL, Luong KN, Van Truong N Le, Tran BQ, Otahal P, et al. *The importance of waist circumference and body mass index in cross-sectional relationships with risk of cardiovascular disease in Vietnam*. PLoS One. 2018;13(5):1–13.
8. *5 Alternatives to Body Mass Index (BMI)*
9. David C.W. Lau, James D. Douketis, Katherine M. Morrison, Irene M. Hramiak, Arya M. Sharma, Ehud Ur, for members of the Obesity Canada Clinical Practice Guidelines Expert Panel. 2006 *Canadian clinical practice guidelines on the management and prevention of obesity in adults and children*. CMAJ April 10, 2007, vol. 176 no. 8 DOI: 10.1503/ cmaj.061409
10. Australian Government: Department of Health and Aging. *Clinical Practice Guidelines for the Management of overweight and obesity in adults, adolescents and children in Australia Canberra*; 2003.
11. Dai H, Alsalhe TA, Chalghaf N, Riccò M, Bragazzi NL, Wu J. *The global burden of disease attributable to high body mass index in 195 countries and territories, 1990–2017: An analysis of the Global Burden of Disease Study.* PLoS Med. 2020;17(7):1–19.
12. *World health survey Saudi Arabia (KSAWHS) Final report*
13. Wright, S.M., Aronne, L.J. *Causes of obesity*. Abdom Radiol 37, 730–732 (2012). https://doi.org/10.1007/s00261-012-9862-x
14. Martinez JA. *Body-weight regulation : causes of obesity*. 2000;337–45.
15. Clemmensen C, Petersen MB, Sorensen TIA. *Will the COVID-19 pandemic worsen the obesity epidemic?* Nat Rev Endocrinol [Internet]. 2020;16(9):469–70.
16. *Ministry of Health Awareness Platform: Obesity*
17. Waxman A; World Health Assembly. *WHO global strategy on diet, physical activity and health. Food Nutr Bull.* 2004 Sep;25(3):292-302. doi: 10.1177/156482650402500310. PMID: 15460274.
18. *Saudi guidelines on the prevention and management of obesity*
19. *Regional Recommendations for the Treatment and Management of Adult Obesity in the Gulf & Lebanon*