

Approach to obese patient

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Objectives

To define obesity and classify the degree of obesity based on BMI, waist circumference and waist-hip-ratio

To understand the prevalence of obesity in Saudi Arabia

To understand methods to prevent obesity in the community

To know the common causes of obesity in the community

To recognize common health problems associated with obesity

To understand the evidence based approach to reducing weight (exercise, dieting, drug treatment, and bariatric surgical intervention)

To understand the roles of health team, medical students, and school health professionals in addressing the problems of obesity in the community

Adults Obesity:



- ❖ **Obesity in adults defined as body mass index (BMI) ≥ 30 kg/m²**
- ❖ **BMI = weight in kg divided by square of height in meters, or use BMI calculator .**
- ❖ **Android body type is characterized by excessive adipose tissue surrounding the intra-abdominal organs, is also referred to as visceral or central obesity.**
- ❖ **Gynoid body type is characterized by excessive fat deposition in the hips, buttocks and thigh.**

National Institute for Health and Care Excellence (NICE). Obesity: guidance on the prevention of overweight and obesity in adults and children. NICE 2006 Dec:CG43 PDF, guideline update summary can be found in BMJ 2014 Nov 27;349:g6608

Shuster, A., Patlas, M., Pinthus, J. H., & Mourtzakis, M. (2012). The clinical importance of visceral adiposity: a critical review of methods for visceral adipose tissue analysis. The British journal of radiology, 85(1009), 1-10.

Ashwell M, Cole TJ, Dixon AK. New insight into the anthropometric classification of fat distribution shown by computed tomography. Br Med J Clin Res Ed 1985;290:1692-4 [PMC free article] [PubMed]

BMI Classification:



BMI: < 18.5 kg/m² | Low weight



BMI: 18.5-24.9 kg/m² | Healthy weight



BMI: 25-29.9 kg/m² | Overweight



BMI: 30-34.9 kg/m² | Obese Class I



BMI: 35-39.9 kg/m² | Obese Class II



BMI: ≥ 40 kg/m² | Obese Class III (severe obesity)

Waist circumference:

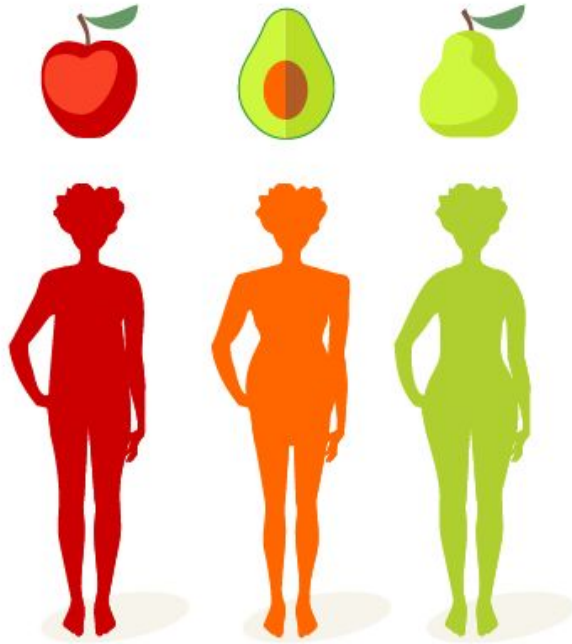
- ❖ Waist circumference (measured at iliac crest of pelvis), may be particularly useful if BMI < 35 kg/m²

Risk	Female	Male
Low	< 31.5 inches (80 cm)	< 37 inches (94 cm)
High	≥ 31.5 inches (80 cm)	≥ 37 inches (94 cm)
Very high	≥ 34.6 inches (88 cm)	≥ 40.2 inches (102 cm)

DynaMed Plus [Internet]. Ipswich (MA): EBSCO Information Services. 1995 - . Record No. T115009, Obesity in adults; [updated 2018 Dec 03, cited 2 March 2019]. Available from <https://www.dynamed.com/topics/dmp~AN~T115009>.

Garvey WT, Mechanick JI, Brett EM, et al; American Association of Clinical Endocrinologists/American College of Endocrinology (AAACE/ACE) Comprehensive Clinical Practice Guidelines for Medical Care of Patients with Obesity. *Endocr Pract* 2016 Jul;22 Suppl 3:1 PDF, executive summary can be found at AAACE/ACE 2016 PDF

Waist-to-hip ratio:



What your Waist-to-Hip Ratio Means

WOMEN	HEALTH RISK	BODY SHAPE
0.80 or below	Low	Pear
0.81 to 0.85	Moderate	Avocado
0.85+	High	Apple
MEN	HEALTH RISK	BODY SHAPE
0.95 or below	Low	Pear
0.96 to 1.0	Moderate	Avocado
1.0+	High	Apple

Children and adolescents Obesity:

- ❖ **Obesity in children and adolescents is generally identified as a body mass index (BMI) > 95th percentile for age/sex.**

Classification:



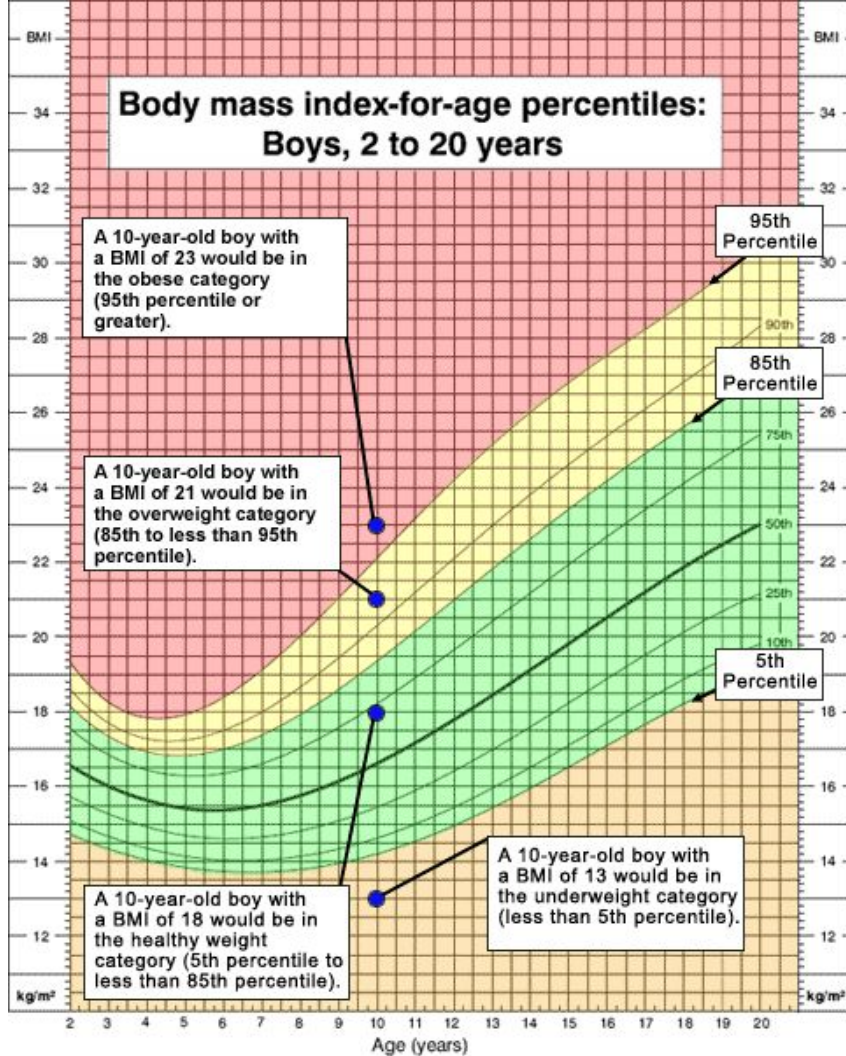
BMI \geq 85th percentile but $<$ 95th percentile for sex and age | **Overweight**



BMI \geq 95th percentile for sex and age | **Obese**



BMI \geq 99th percentile for sex and age | **Severely obese**



prevalence of obesity in Saudi Arabia in adults :

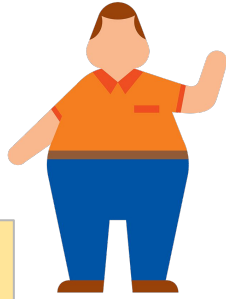
- ❖ worldwide prevalence of overweight or obesity 36.9% in men and 38% in women in 2013 , age-standardized global prevalence of overweight or obesity (body mass index ≥ 25 kg/m²) in adults ≥ 20 years old in 2013:

36.9% in men

38% in women

Reference - [Lancet 2014 Aug 30;384\(9945\):766](#)

- ❖ 2014 Riyadh, Jeddah, and Al-Khobar (2,908)
Obesity: **Male = 24.1%; Females = 14%**
Prevalence of overweight equals 20.8% and 19.5%
Prevalence of abdominal obesity equals to 30.3% and 38.7% in females and males.
Al-Hazzaa et al. (2014)

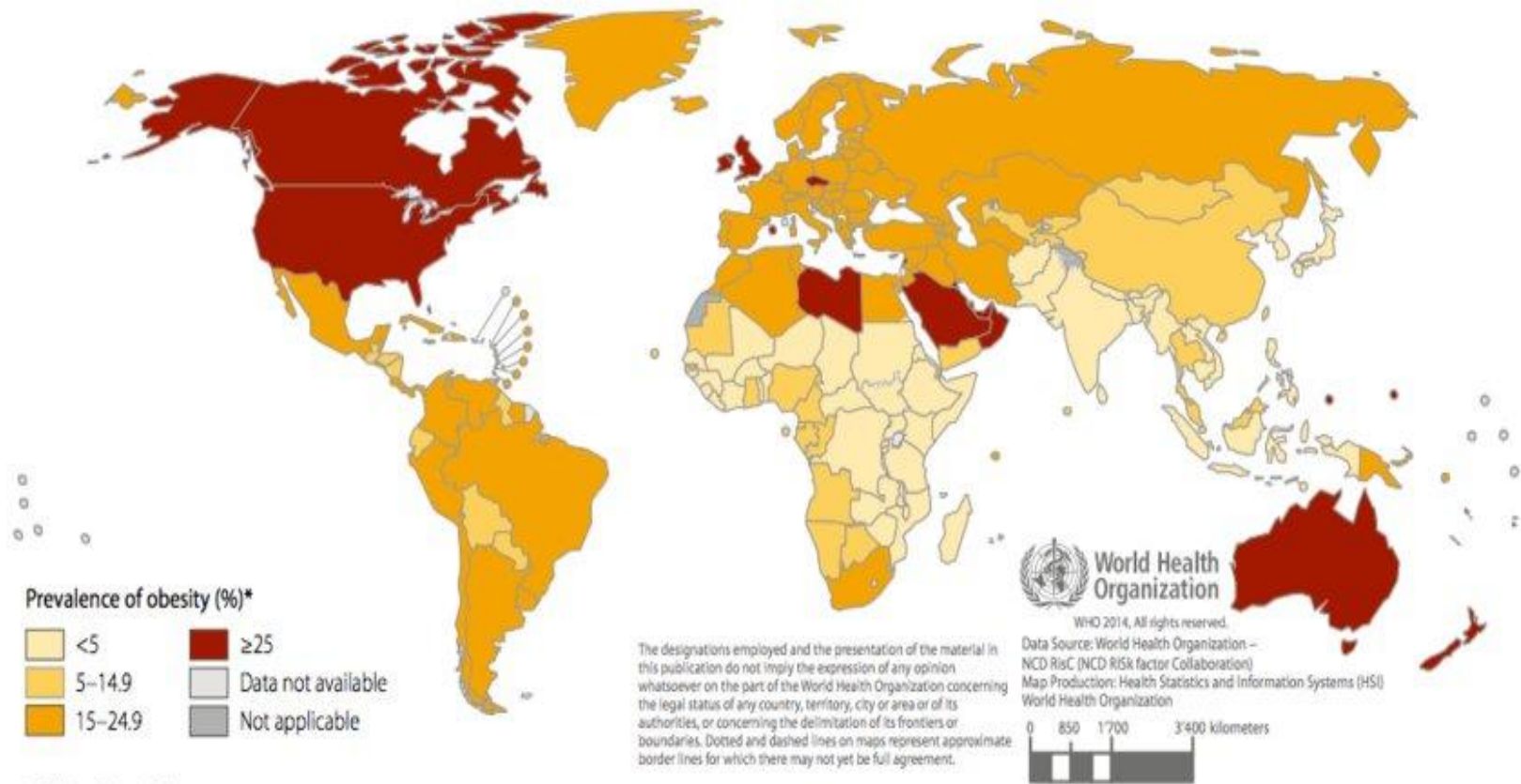


And if things continue as they are

The overall obesity will increase to **41%** in men and **78%** in women by 2022. Al-Quwaidhi et al. (2014)

M Alqarni SS (2016) A Review of Prevalence of Obesity in Saudi Arabia. J Obes Eat Disord 2:2. doi: 10.21767/2471-8203.100025

Fig. 7.1 Age-standardized prevalence of obesity in men aged 18 years and over (BMI ≥ 30 kg/m²), 2014



Childhood obesity:

worldwide prevalence of obesity in children 5-19 years old in 2016 :

5.6% in girls

7.8% in boys

Reference - [Lancet 2017 Dec 16;390\(10113\):2627](#)

prevalence in Saudi arabia :

Based on **BMI**, **18%** of children were obese, **18%** were overweight, and **64%** were underweight/normal.

[Saudi Med J.](#) 2016 Dec;37(12):1387-1394. doi: 10.15537/smj.2016.12.15904.

In general, The cause of obesity is high caloric intake associated with decreased caloric expenditure , but there are other factors could facilitate or induce this problem which are :



GENETIC



BEHAVIOURAL



CULTURAL



ENVIRONMENTAL



HORMONAL



CHILDHOOD

Genetic



Heritable causes of obesity presents in 70% of obese people! .[1]



Monozygotic twins have higher correlation In BMI than dizygotic .
[2] (level 2 evidence).



Obese or overweight parents have higher chances to get obese child . [3]

- Comuzzie AG, Allison DB. The search for human obesity genes. Science. 1998 May 29;280(5368):1374-7.[1]
- N Engl J Med 1990 May 24;322(21):1483 [2]
- N Engl J Med 1990 Oct 11;323(15):1067[3]

Behavioural



Lifestyle

- **Age ≥ 40 years.**^[1]
- **Watching television**^[2] **level 2 evidence .**
- **Smoking cessation** ^[3]
- **Life events : pregnancy , menopause.**^[4]



Short sleep Duration

^[5]

Poor dietary habits

- **Eating disorders (binge-eating)** ^[6]
- **Larger portion size.**^[7]
- **Calorie dense food.**
- **Exposure to take away food.**^[8]



Stress or Mental illness

^[9]

- Hedley AA, Ogden CL, Johnson CL, et al. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. JAMA. 2004 Jun 16;291(23):2847-50.[1]
- JAMA 2003 Apr 9;289(14):1785[2]
- O'Hara P, Connett JE, Lee WW, et al. Early and late weight gain following smoking cessation in the Lung Health Study. Am J Epidemiol. 1998 Nov 1;148(9):821-30.[3]
- Rossner S, Ohlin A. Pregnancy as a risk factor for obesity: lessons from the Stockholm Pregnancy and Weight Development Study. Obes Res. 1995;3(suppl 2):S267-75.[4]
- Hasler G, Buysse DJ, Klaghofer R, et al. The association between short sleep duration and obesity in young adults: a 13-year prospective study. Sleep. 2004 Jun 15;27(4):661-6.[5]
- Chou SY, Grossman M, Saffer H. An economic analysis of adult obesity: results from the Behavioral Risk Factor Surveillance System. J Health Econ. 2004 May;23(3):565-87.[6]
- Ello-Martin JA, Ledikwe JH, Rolls BJ. The influence of food portion size and energy density on energy intake: implications for weight management. Am J Clin Nutr. 2005 Jul;82(1 suppl):S236-41.[7]
- BMJ 2014 Mar 13;348:g1464[8]
- Megna JL, Schwartz TL, Siddiqui UA, et al. Obesity in adults with serious and persistent mental illness: a review of postulated mechanisms and current interventions. Ann Clin Psychiatry. 2011 May;23(2):131-40.[9]



Cultural

- Beliefs about beauty and body image.^[1]
- Cultural practices

Environmental



Low socioeconomic level^[1]



Medications side effects^{.[2][3][4][5]}

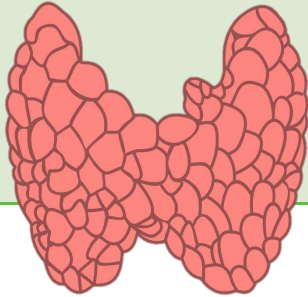
- **Antidepressant therapy**
- **Antipsychotic therapy**
- **Beta-blocker therapy**
- **Adjuvant breast cancer therapy**

Rosmond R, Bjorntorp P. Psychosocial and socio-economic factors in women and their relationship to obesity and regional body fat distribution. *Int J Obes Relat Metab Disord.* 1999 Feb;23(2):138-45.[1]
Zimmermann U, Kraus T, Himmerich H, et al. Epidemiology, implications and mechanisms underlying drug-induced weight gain in psychiatric patients. *J Psychiatr Res.* 2003 May-Jun;37(3):193-220.[2]
Allison DB, Mentore JL, Heo M, et al. Antipsychotic-induced weight gain: a comprehensive research synthesis. *Am J Psychiatry.* 1999 Nov;156(11):1686-96.[3]
Sharma AM, Pischon T, Hardt S, et al. Hypothesis: beta-adrenergic receptor blockers and weight gain: a systematic analysis. *Hypertension.* 2001 Feb;37(2):250-4.[4]
Shapiro CL, Recht A. Side effects of adjuvant treatment of breast cancer. *N Engl J Med.* 2001 Jun 28;344(26):1997-2008.[5]

Hormonal

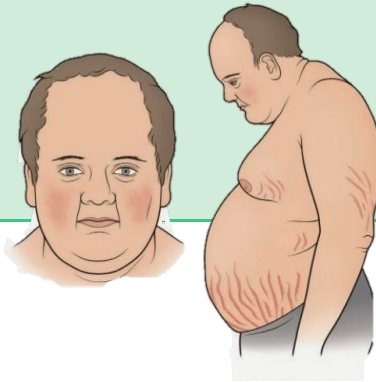
1

Hypothyroidism^[1]



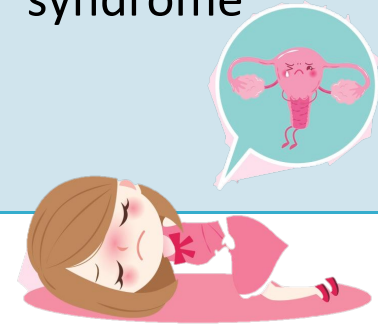
2

Hypercortisolism^[2]



3

Polycystic ovarian syndrome



Barlow SE, Dietz WH. Obesity evaluation and treatment: Expert Committee recommendations. The Maternal and Child Health Bureau, Health Resources and Services Administration and the Department of Health and Human Services. Pediatrics. 1998 Sep;102(3):E29.[1]

Barlow SE, Dietz WH. Obesity evaluation and treatment: Expert Committee recommendations. The Maternal and Child Health Bureau, Health Resources and Services Administration and the Department of Health and Human Services. Pediatrics. 1998 Sep;102(3):E29.[2]

Childhood obesity

Childhood obesity is considered one of the risk factors for adult obesity.

The risk factors for obesity in children are the same risk factors in adults , but these are some exceptions :

Formula feeding !*

Obese parents^[1]

Maternal gestational diabetes^[2]

Rapid weight gain in infancy^[3]

Intrauterine growth restriction^[4]

weight gain in early childhood^[5]

***Formula-fed infants gained weight more rapidly and out of proportion to linear growth than did predominantly breastfed infants.^[6]**

A child's risk of obesity is increased with ≥ 1 obese parents.^[1]

Vohr BR, Boney CM. Gestational diabetes: the forerunner for the development of maternal and childhood obesity and metabolic syndrome? J Matern Fetal Neonatal Med. 2008 Mar;21(3):149-57. [2]

Ong KK, Loos RJ. Rapid infancy weight gain and subsequent obesity: systematic reviews and hopeful suggestions. Acta Paediatr. 2006 Aug;95(8):904-8.[3]

Dubois L, Girard M. Early determinants of overweight at 4.5 years in a population-based longitudinal study. Int J Obes (Lond). 2006 Apr;30(4):610-7.[4]

Nader PR, O'Brien M, Houts R, et al. Identifying risk for obesity in early childhood. Pediatrics. 2006 Sep;118(3):e594-601.[5]

Bell, K., Wagner, C., Feldman, H., Shypailo, R. and Belfort, M. (2017). Associations of infant feeding with trajectories of body composition and growth. The American Journal of Clinical Nutrition, 106(2), pp.491-498.[6]

What about the risk factors for abdominal obesity ?

Increased age

male gender (and
post-menopause)

family history

Asian and Indian
ethnicity

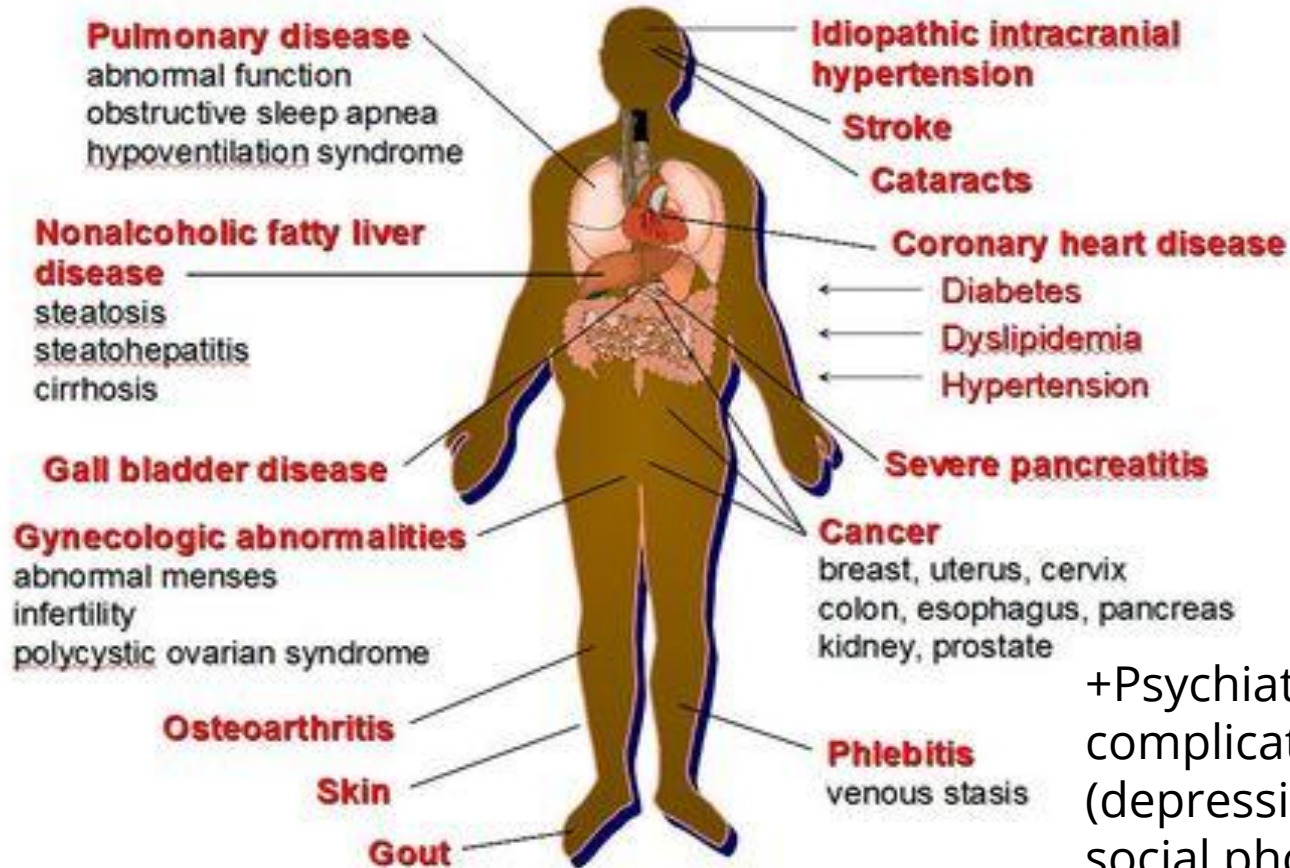
dysregulation of
endocannabinoid
system

decreased
growth hormone
levels

fructose
consumption

sedentary
lifestyle

Medical Complications of Obesity



+Psychiatric complications:
(depression - isolation - social phobia)

Evidence based approach to reduce weight :

Diet and exercise

- Eat 500-1000 calorie less
- Workout 150 min\ week
- By: low carb diet, portion control plate

Bariatric surgery

- Indications: BMI of 40 ,
if comorbidities BMI of 35.
- It reduces morbidities and mortalities
on the the long run.

Dynamed.com, www.dynamed.com/topics/dmp~AN~T316887.

Dynamed.com, www.dynamed.com/topics/dmp~AN~T316887

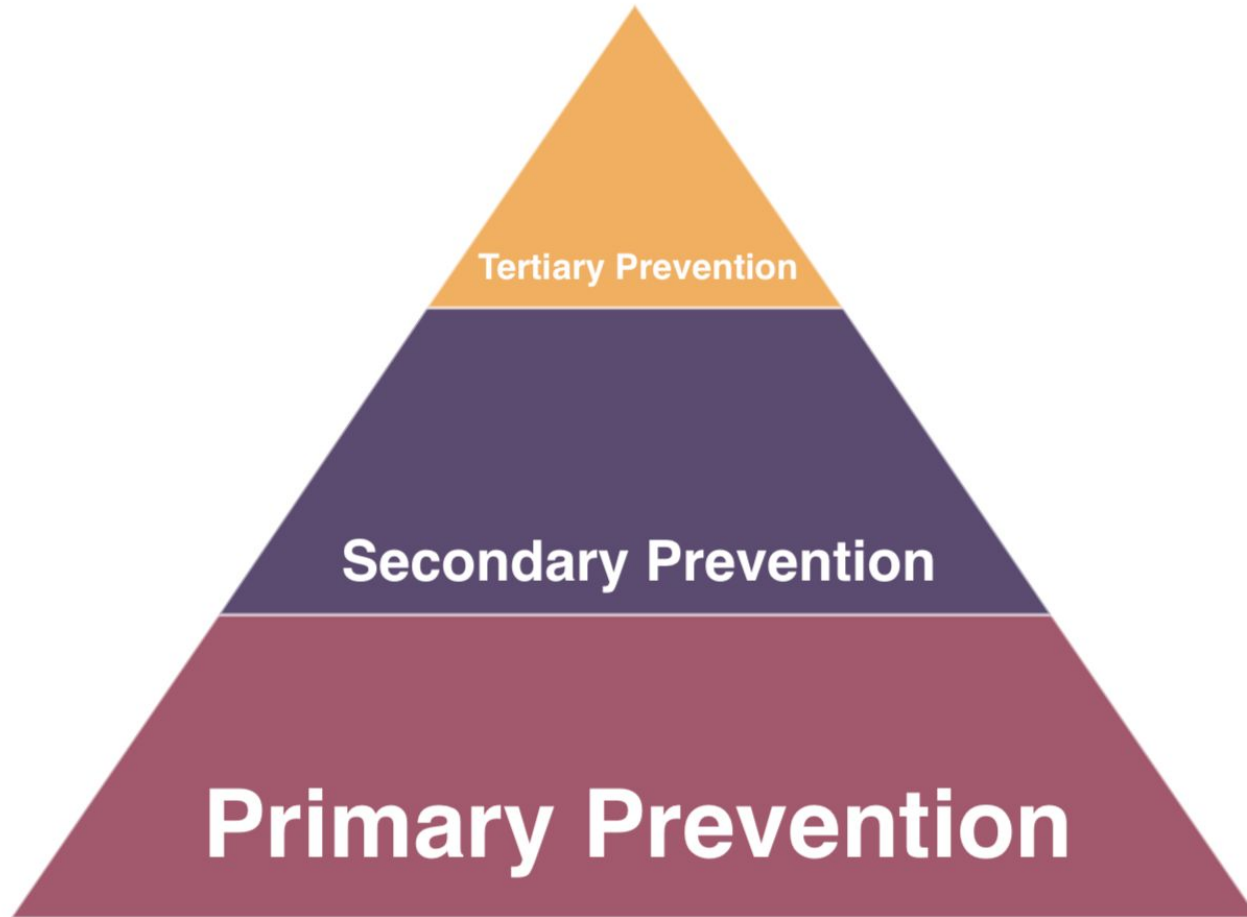
Dynamed.com, www.dynamed.com/topics/dmp~AN~T483434.

Evidence based approach to reduce weight

very low-carbohydrate diet	high-protein, moderate-carbohydrate	Low-fat diets
<ul style="list-style-type: none">- 4% total calories from carbohydrate, 35% protein, 61% fat	<ul style="list-style-type: none">- increased high-density lipoprotein (HDL) cholesterol at 4 and 12 months compared to baseline	<ul style="list-style-type: none">- patients not aiming to lose weight

evidence based approach to reducing weight

Medication	Orlistat	Lorcaserin	Phentermine
FDA	Approved Adults and children ages 12 and older	Approved for adult	Approved for Adults
MOA	Works in your gut to reduce the amount of fat your body absorbs from the food you eat	Acts on the serotonin receptors in the brain. It helps you feel full after eating smaller amounts of food.	A mix of two medications: naltrexone, which is used to treat alcohol and drug dependence, and bupropion, which is used to treat depression or help people quit smoking. May make you feel less hungry or full sooner.
Side Effects	- Diarrhea , gas , leakage of oily stools , stomach pain	- Constipation , cough, dizziness dry mouth , feeling tired Headaches , nausea , serotonin syndrome	- taste changes, especially with carbonated beverages tingling of your hands and feet trouble sleeping



Primary Prevention

Focusing on healthy life style behaviours related to maintaining normal weight. (level 2 [mid-level] evidence)



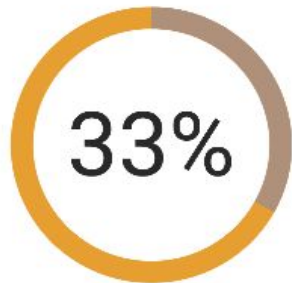
Exercising and active life style. (level 2 [mid-level] evidence)



Longterm observation for what you eats and drinks & regular weight watching. (level 2 [mid-level] evidence)



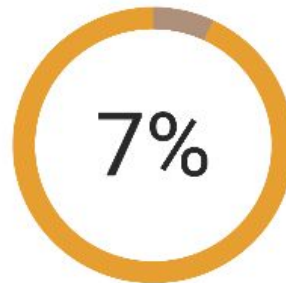
EAT - WELL



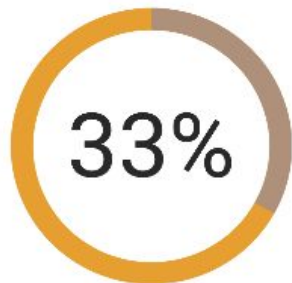
FRUITS AND VEGETABLES



DIARY PRODUCTS



FAT AND SWEETS



STARCH, RICE AND BREAD.



MEAT AND FISH

Eatwell Guide

Check the label on packaged foods

Each serving (150g) contains

Energy	Fat	Saturated	Sugars	Salt
1046kJ 250kcal	3.0g	1.3g	34g	0.9g
LOW	LOW	LOW	HIGH	MED
13%	4%	7%	38%	15%

of an adult's reference intake

Typical values (as sold) per 100g: 697kJ/ 167kcal

Choose foods lower in fat, salt and sugars

Use the Eatwell Guide to help you get a balance of healthier and more sustainable food. It shows how much of what you eat overall should come from each food group.

6-8 a day

Water, lower fat milk, sugar-free drinks including tea and coffee all count.

Limit fruit juice and/or smoothies to a total of 150ml a day.

Eat at least 5 portions of a variety of fruit and vegetables every day

Fruit and vegetables



Eat less often and in small amounts

Choose wholegrain or higher fibre versions with less added fat, salt and sugar

Potatoes, bread, rice, pasta and other starchy carbohydrates



Beans, pulses, fish, eggs, meat and other proteins

Eat more beans and pulses, 2 portions of sustainably sourced fish per week, one of which is oily. Eat less red and processed meat



Dairy and alternatives

Choose lower fat and lower sugar options



Oil & spreads

Choose unsaturated oils and use in small amounts

Per day 2000kcal 2500kcal = ALL FOOD + ALL DRINKS



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 <2 hour

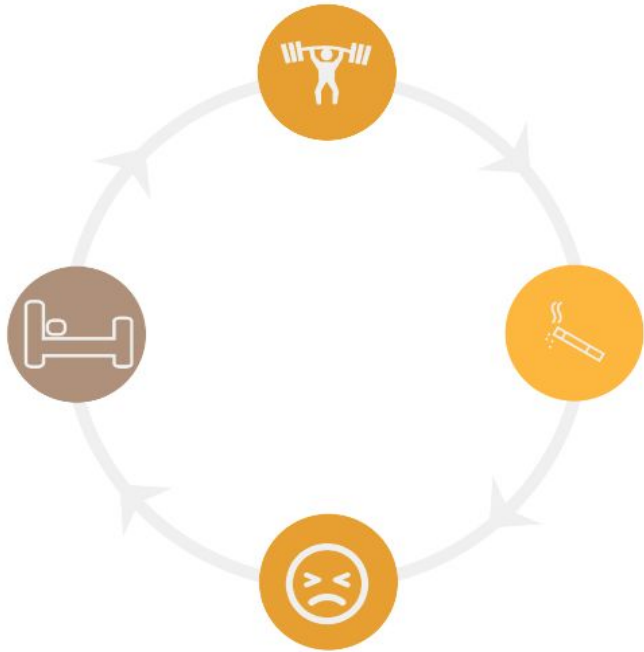
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Include at least 1 hour or more of active play every day

0

Skip sugar sweetened beverages, drink more water every day.

Exercising and active life style



Walk and exercise for 30 minute or more, 5 days a week. (level 2 [mid-level] evidence)

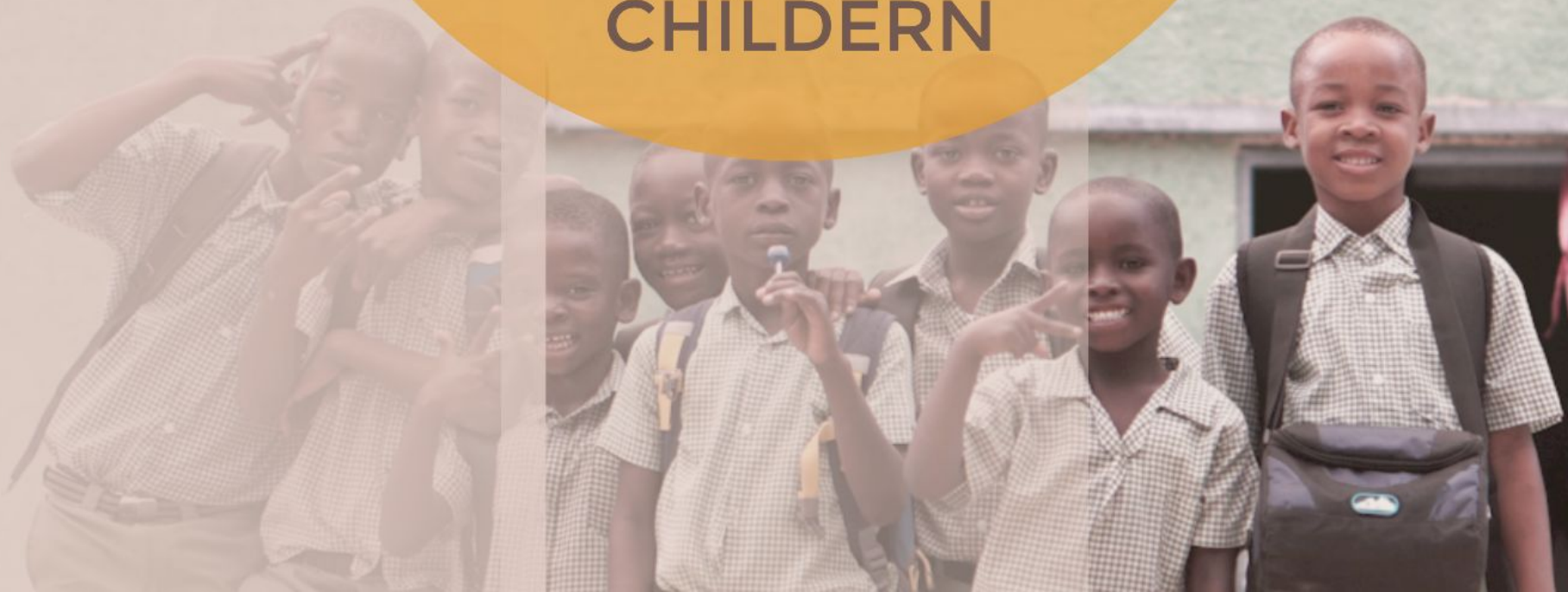
Cessation of smoking. (level 2 [mid-level] evidence)

Avoid social and psychological stresses. (level 2 [mid-level] evidence)

Get enough sleep at night.(level 2 [mid-level] evidence)



HEALTH OF OUR CHILDREN





DOES

Exclusive breastfeeding from birth up to the age of 6 months
(weak recommendation)

Encouragement of healthy food consumption

Change family eating habits and activity levels.



DONT'S

Discourage sedentary behaviour of more than 2 hour for children particularly of screen time (TV watching, computer use, and playing video games)
(Strong recommendation)

Avoid using food as a reward

Screening of obesity in children



USPSTF recommends screening for obesity in children ≥ 6 years old and offering or referring to intensive counseling and behavioural interventions to promote improvements in weight status. (USPSTF Grade B recommendation)



- neck circumference may identify children with high BMI
- weight-for-age may be screening tool. (level 2 [mid-level] evidence)



**I'M OBESE,
WHAT CAN
I DO NOW?**

SECONDARY PREVENTION



Exercise

(level 2 [mid-level] evidence)

Diet

(level 2 [mid-level] evidence)



Psychological/behavioural

(level 2 [mid-level] evidence)



Diet and physical activity may increase likelihood of maintaining health weight more than when focusing on physical activity alone.



CAN I USE MEDICATION or SURGERY INSTEAD?

INDICATION:

- 1- Failure of diet and exercise.
- 2- BMI > 30
- 3- BMI > 27 and associated with medical problems related to obesity.

Roles of health team, medical students, and school health professionals:

1- Health team :

- Address the risks behind having sedentary lifestyles.^[1]
- work as multidisciplinary team of dietitians, nurses, educators, physical trainers, and clinical psychologists to provide a comprehensive care.^[2]
- Refer obese patients to dietician to have a healthy diet.^[3]

[1]Reference - [Physiol Rev 2013 Jan;93\(1\):359](#) [2]Reference - [JAMA 2014 Nov 5;312\(17\):1779](#), Reference - [BMJ 2009 Oct 6;339:b3765](#), Reference - [Arch Gen Psychiatry 2010 Mar;67\(3\):220](#), Reference - [Prev Med 2012 Nov;55\(5\):464](#) [3] [level 2 \[mid-level\] evidence](#)

2- School health professionals :

- Provide a good and comfortable environment for students to reduce psychological factors such as STRESS.^[1]
- Promoting Healthy Nutrition at School.^[2]
- educate the students about how to choose healthy diet.^[3]
- Provide all physical activities and encourage students to participate in.^[4]
- Implement a screening program to detect and provide appropriate care.^[5]

[1] Reference - [Prev Med 2012 Nov;55\(5\):464](#) [2] Reference - [Am J Public Health 2007 Apr;97\(4\):667](#) [3]Reference - [Int J Behav Nutr Phys Act 2007 Jun 27;4:27](#), Reference - [BMJ 2008 Oct 21;337:a2002](#), Reference - [Am J Public Health 2007 Apr;97\(4\):667](#), Reference - [Obes Rev 2008 Nov;9\(6\):535](#)[4][ACSM Evidence Category B](#)[5]Reference - [JAMA 2017 Jun 20;317\(23\):2417](#), [Obesity \(Silver Spring\) 2007 Dec;15\(12\):3106](#), [Pediatrics 2010 Aug;126\(2\):e306](#)

3- Medical students :

- Try to be an example through having healthy lifestyle.
- Awareness campaign about obesity risks and physical activity benefits.
- Educate people about the meanings of nutritional label components.

لائحة تطبيق عرض الأسعار الحرارية

مجالات ونطاق تطبيق لائحة الأسعار الحرارية



أماكن عرض الأسعار الحرارية



سيتم منح هذه المنشآت مهلة حتى تاريخ 2018/12/31م
وسوف تتخذ الهيئة الإجراءات النظامية بشأن المنشآت المخالفة
بالتعاون مع وزارة الشؤون البلدية والقروية.



MCQs

Q1: Body mass index is a measurement of relative weight adjusted to height, healthy BMI range is between:

- A. < 18.5
- B. 18.5 - 24.9
- C. 25 - 29.9
- D. 30 - 34.9

Q2: Which of the following is considered a risk factor for obesity :

- A. dizygotic twins
- B. Long sleep duration
- C. Young age
- D. pregnancy

Q3: Which of the following is considered a screening method in obese child?

- A. Abdominal circumference.
- B. Head circumference.
- C. Neck circumference.
- D. Height .

Q4: Which of the following is a complication of obesity ?

- A. Dehydration
- B. Diabetes mellitus type 1
- C. Cataract
- D. Low cognitive function

Q5: One of Orlistat complication :

- a. Nausea and vomiting
- b. Psychosis
- c. High blood pressure
- d. Fecal incontinence