(2.2) Introduction to the Case Study: Obesity

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Objectives

By the end of this lecture, the student should be able to:

• Recognize the initial aspects of the case study

• Explain the findings of the case depending on collaboration of basic science with health care professionals

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Concerning Obesity:

By the end of this lecture, the student should be able to:

• Understand the causes & consequences of obesity
• Recognize the implications of the Egyptian lifestyle on the incidence of obesity & obesity related health problems.
• Understand the role of health professionals in combating obesity in Egyptian population.
• Review dietary & lifestyle issues of obesity.
• Assess the incidence of obesity, especially in the young.
• Define the nutritional needs of adolescents & young adults.
• Be aware of the energy content of food types.
• Be aware of energy balance.
• Understand the metabolic chemistry relevant to digestion of carbohydrates, fats & proteins, and fat.

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Case Studies

• These are the main focus of interest for a health care student.

• They form the basis of case based learning (CBL)
Case Presentation: An art that needs mastering

Skills of case presentation are vital to handle any complicated medical condition.
An ideal way to get started at a case study is to fully understand all its aspects:

Approach the case study by knowing:

- What to do
- How to do it

And,
We are the “thinking” health professionals

• Basic medical sciences are important to recognize and address clinical issues that arise in any organ bodily system.

• Understanding the underlying biochemical, structural, and/or biophysical abnormality that leads to clinical disease in any of those systems is crucial to our practice.
Understanding the basic science content through the use of a clinical case presentation is both meaningful and enjoyable.
How to handle a clinical case study:

• Present a case
• Give an answer (diagnosis)
• Describe and analyze the basic science concepts underlying the case
• Come up with an action plan (therapeutic management of the case)
• Describe the methods you should adopt for the assessment of your strategy
• Describe the future follow up methods
Case scenario

Mariam is an 18 year old girl from Talkha who enrolled in Cairo in the fall of 2016 to study French. She has one younger brother and two younger sisters. Her hobbies include spending time with her family, reading, singing and visiting the mall with friends. She has recently moved into university accommodation.
Case scenario (cont.):

Mariam’s family are rather conservative. Mariam’s mother stays at home to look after her family and is an excellent homemaker and cook. Mariam and her parents and siblings enjoy spending time with their extended family, and eating is an important element of this. As a consequence they are all overweight.

Mariam has a small group of mainly female friends. Whilst she is gregarious and outgoing in their company, she finds social situations a struggle. She is very self conscious about her appearance. She is particularly worried about how she will make friends in the university.
Diagnosis:
A case of obesity

- **Obesity** is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health.

- People are generally considered obese when their body mass index (BMI) is over 30 kg/m².
WEIGHT CATEGORIES

UNDERWEIGHT < 18.5
HEALTHY 18.5-24.9
OVERWEIGHT 25.0-29.9
OBSESE > 30.0
Why choosing a case of Obesity?
Worldwide Obesity has risen to Titanic Proportions:

• Nearly a third of the global population are overweight or obese.

• Egypt weighs in, as the 7th most overweight country in the world.

• In Egypt, nearly 70% of the adult population—about 56.5 million people—are considered to be overweight (according to a study published in the Lancet 2014)
Obesity poses a long list of health problems & hazards
Obesity increases the likelihood of certain diseases:

- Coronary heart disease & Stroke
- type 2 diabetes
- Dyslipidemia
- insulin resistance
- obstructive sleep apnea
- certain types of cancer
- osteoarthritis
- fatty liver
First begin by determining the general causes of obesity
General Causes of Obesity

• Dietary: excessive food intake (lack of energy balance)
• Inactive lifestyle (sedentary lifestyle)
• Environmental & socio-economic causes
• Genes & family history
• Genetic susceptibility & genetic disorders
• Health conditions (endocrine disorders)
• Emotional & psychological disorders
• Medications
• Evolutionary
Historical background of obesity:

• In late 12th century, obesity was considered a disease of the rich.

• Malnutrition in early life is believed to play a role in the rising rates of obesity in the developing world.
Implications of the life style of Egyptian young adults on obesity:

• Eating more during watching television
• Snacking between meals
• Eating more during feeling of stress
Leading a Sedentary lifestyle, as judged by:

• Longer duration of watching television
• Longer duration of computer use
• Less duration of practicing exercise & sports
Dietary & lifestyle issues

Rapid nutrition transition:
A shift from a diet of simple traditional foods to a diet more reliant on processed foods, fat, & sugar.

Internationalization & commercialization of the food trade, thus facilitating this shift.
All this leads to rise in obesity
Other changes which lessen physical activity:

Inactive people don’t burn the calories they take in their food.

• reduced manual labor
• motorization of transportation
• modern technology & conveniences at home
The WHO predicts that overweight & obesity may soon replace under-nutrition and infectious diseases, as the most significant cause of poor health.
Public health problem:

Obesity is a public health problem in developing world due to:

- its prevalence
- costs
- health effects
- economic burden on government services
This calls for an urgent need to develop a strategy for prevention & control of obesity
Role of health professionals in combating obesity:

• Understanding
  And
• Correcting the factors that:
  - cause excess food energy consumption
  - inhibit physical activity.
Target areas:

- child-care centers for preschool children
- schools
- health care centers
- food companies
- food preparation institutes
- media
- public benefit organizations
- the workplace
Strategy will be based on:
Knowing nutritional needs of adolescents & young adults:

Encouraging healthy eating habits & lifestyle is essential

Adolescents undergo a rapid growth spurt & have increased physical activity. They need plenty of all nutrients especially:

- Calcium
- Iodine
- Iron
Make the food choices by knowing the energy content of food types
Energy content of food types:

- **FAT**: 9 kcal per 1 gram
- **CARBOHYDRATES**: 4 kcal per 1 gram
- **PROTEIN**: 4 kcal per 1 gram
Be aware of the
Energy Balance
Energy Balance

Calories “In”
- Carbohydrate
- Protein
- Fat

Calories “Out”
- Exercise
- Lifestyle
- RMR
To Maintain Weight:

Maintenance

Weight Before → Calories Consumed + Activity → Weight After
To Lose Weight:

Increase Activity

Weight Before → Calories Consumed + Activity → Weight After

Decrease Calories

Weight Before → Calories Consumed + Activity → Weight After

Decrease Calories & Increase Activity

Weight Before → Calories Consumed + Activity → Weight After
Importance of collaboration of expertise in the field of Metabolism & Physiology
Biochemistry and human physiology provide a detailed model of energy balance:

• To understand the flow of energy in the bio system

• To understand why many weight-loss interventions have little long-term success and poor program adherence.
Energy Expenditure:

Both Exercise and the type of foods we consume are crucial to energy expenditure.
Dietary causes X Physical activity
Factors which have a great effect on metabolism are:

• **Lean muscle mass:**
  The more muscle mass, the higher the metabolism

• **thermogenesis of foods**
  (especially protein, more than carbohydrates or fats)
Understanding from the Metabolic perspective:

Chronic and high consumption of carbohydrates (refined carbohydrates), have been linked with:

- low satiation
- poor appetite control
Macronutrient composition of diet:

Dietary Carbohydrate restriction may achieve:

- improved blood glucose level
- increased utilization of fat stores
- inhibition of fat synthesis
- improvements in lipid profile
- improvements in inflammation
Collaboration of basic sciences to understand & handle a case of obesity
Thus, for handling of a medical case like obesity, we have to understand:

- Biochemistry & Metabolism
- Physiology (role of hormones in appetite control)
- Genetics
- Microbiology (Gut flora affect the metabolic potential)
- Pharmacology (certain medications can cause weight gain)
- Evolution (Thrifty gene hypothesis)
• Basic science and clinical medicine must be wholly integrated.
• Obesity research should address those factors (environmental, behavioral) that lead to dysregulation of energy.
• There is a need for a multidisciplinary approach to understand & correct the factors responsible for the increasing prevalence of obesity.