

PR2.F – Case study - Obesity



Case description

A 16-year-old male patient presents for a dietary assessment, accompanied by his mother.

During the consultation, through anthropometric determinations, a weight of 79.3 kg is determined, a height of 168 cm, an abdominal circumference of 93 cm, and an abdominal skin fold of 39 mm. At the time of the evaluation, the patient had no chronic pathologies.

- The **anamnesis** shows an excessive food intake, due to stress, and a number of 4.5-5 hours of sleep per night
- Do not declare risky behaviors (smoking, alcohol or drug abuse)
- The consumption of food supplements or medicinal products is not declared
- Following a food frequency questionnaire, a high consumption of refined flour-based products, aged cheeses, sweetened dishes, seafood, and sausages is observed
- Irregular meals, reduced hydration (below 1000 ml water/day); fluid consumption is based on sweetened drinks and carbonated products
- The level of physical activity was self-characterized as very low, with no organized or planned sports activity

Questions

Using the information provided, determine:

- the patient's anthropometric status in relation to age
- the energy requirement to maintain the current weight
- nutritional requirements (calories and macronutrients) for weight rebalancing
- basic recommendations for physical activity
- short-term expectations (10 weeks)
- dietary approach if the set goal is not reached
- long-term expectations (2 years)



Example of a dietary approach to the presented case

Anthropometric and nutritional assessment

According to the theoretical data used, a normal resting metabolic rate and a total caloric requirement for maintenance of 2749 kcal/day are established.

16y 0m (192 months), male	
	Value Imperial %ile Z-score 50%ile
Weight (kg)	79.3 174.8 lb 92% 1.38 60.9
Stature (cm)	168 66.1 in 24% -0.72 174
Wt-for-stature (kg)	
BMI-for-age	28.1 96% 1.73 20.5
<ul style="list-style-type: none"> • Obese (96%ile, BMI at 95th%ile is 27.5) 	

Estimated Daily Caloric Needs	2,749 kcal/day
Macronutrients:	
Macronutrient	Recommended Intake Per Day
Carbohydrate	309 - 447 grams ⓘ
Total Fiber	38 grams
Protein	67 grams
Fat	76 - 107 grams ⓘ
Saturated fatty acids	As low as possible while consuming a nutritionally adequate diet.
Trans fatty acids	As low as possible while consuming a nutritionally adequate diet.
α-Linolenic Acid	1.6 grams ⓘ
Linoleic Acid	16 grams ⓘ
Dietary Cholesterol	As low as possible while consuming a nutritionally adequate diet.
Total Water	3.3 liters (about 14 cups) ⓘ

Establishing nutritional requirements

Recommendation for weight reduction			
<i>Caloric deficit: 500 kcal</i>			
Caloric needs:	2200	kcal/day	
	550	kcal/day	
Protein needs:	134.15	g/day	25%
	1.69	g/kg	
Carbohydrate needs:	990.00	kcal/day	45%
	241.46	g/day	
	3.04	g/day	
Lipid needs:	660.00	kcal/zi	30%
	70.97	g/day	
	0.89	g/day	

- Low-intensity physical activity program: walking/cycling/swimming, 30-45 minutes/day, with 60-second breaks depending on tolerance



Reevaluation at ten-week interval

- Height: 1.68 m
- Weight: 74.6 kg (-4.7 kg from the initial weight)
- Abdominal circumference: 89 cm
- Abdominal skin fold: 34 mm
- No known pathologies
- Hydration: 1.8 l/day
- Physical activity level: low (on average 30 min of low-intensity sport)

16y 2m (194 months), male					
	Value	Imperial	%ile	Z-score	50%ile
Weight (kg)	74.6	164.5 lb	85%	1.03	61.6
Stature (cm)	168	66.1 in	22%	-0.78	174
Wt-for-stature (kg)					
BMI-for-age	26.4		93%	1.44	20.6

• **Overweight** (93%ile, BMI >= 85%ile)

Resting metabolic rate testing

BMR values	
Test type	Basal metabolic rate
Steady state interval	12:03:38, 0:04:41
Deviation of V'O ₂	0.108
Deviation of V'CO ₂	0.116
Deviation of RQ	0.062
BMR	1735.942
BMR/Weight	23.27 kcal/d/kg

Recommendation for weight reduction			
No caloric deficit			
Caloric needs:	1750	kcal/day	
Protein needs:	525	kcal/day	30%
	128.05	g/day	
Carbohydrate needs:	1.61	g/kg	40%
	700.00	kcal/day	
	170.73	g/day	
Lipid needs:	2.15	g/day	30%
	525	kcal/di	
	56.45	g/day	
	0.71	g/day	

- Low-intensity physical activity programme with interspersed moderate activity: walking/cycling/swimming, 60 minutes/day, with breaks according to tolerance + bodyweight activity for the upper trend
- A varied food plan is initiated, with all food groups, 3 main meals + 2 snacks, with an average of 1750 kcal/day
- Behavioral therapy is recommended

Evaluation at an interval of ≈ 2 years

- ▶ Weight: 68.1 kg
- ▶ Height: 172 cm
- ▶ Abdominal circumference: 71 cm
- ▶ Physical activity level: moderately active, constant
- ▶ Increased self-esteem and confidence
- ▶ Positive integration into society
- ▶ Healthy relationship with food, predominating nutritious foods
- ▶ No yo-yo effect
- ▶ Improved rest level (over 7 hours of sleep per night)

18y 1m (217 months), male					
	Value	Imperial	%ile	Z-score	50%ile
Weight (kg)	68.1	150.1 lb	53%	0.07	67.4
Stature (cm)	172	67.7 in	28%	-0.59	176
Wt-for-stature (kg)					
BMI-for-age	23		64%	0.35	21.9

Weight evolution after personalized dietary intervention

16y 0m (192 months), male

	Value	Imperial	%ile	Z-score	50%ile
Weight (kg)	79.3	174.8 lb	92%	1.38	60.9
Stature (cm)	168	66.1 in	24%	-0.72	174
Wt-for-stature (kg)					
BMI-for-age	28.1		96%	1.73	20.5

- **Obese** (96%ile, BMI at 95th%ile is 27.5)



- The patient is with normal weight
- Dietary monitoring is continued at 1-year intervals or as needed
- Psychotherapy is resumed as needed

18y 1m (217 months), male

	Value	Imperial	%ile	Z-score	50%ile
Weight (kg)	68.1	150.1 lb	53%	0.07	67.4
Stature (cm)	172	67.7 in	28%	-0.59	176
Wt-for-stature (kg)					
BMI-for-age	23		64%	0.35	21.9