

Metabolically healthy obesity: exploring the paradox

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Introduction: Obesity is a chronic disease with a prevalence increasing worldwide and with a strong association with multiple comorbidities. It is defined by body mass index, without considering the metabolic state of the patient. In fact, it is well recognized that individuals in the same body mass index category can have significant heterogeneity of metabolic features. In this context, several studies have recently focused on the evaluation of obese individuals with normal metabolic features despite their increased adiposity. However, there are few data on the proportion of obese patients without metabolic syndrome.

Objective: To characterize patients considered to be metabolically healthy followed at the obesity outpatient clinic of one University Hospital, and to compare this group with a group of obese patients with metabolic syndrome.

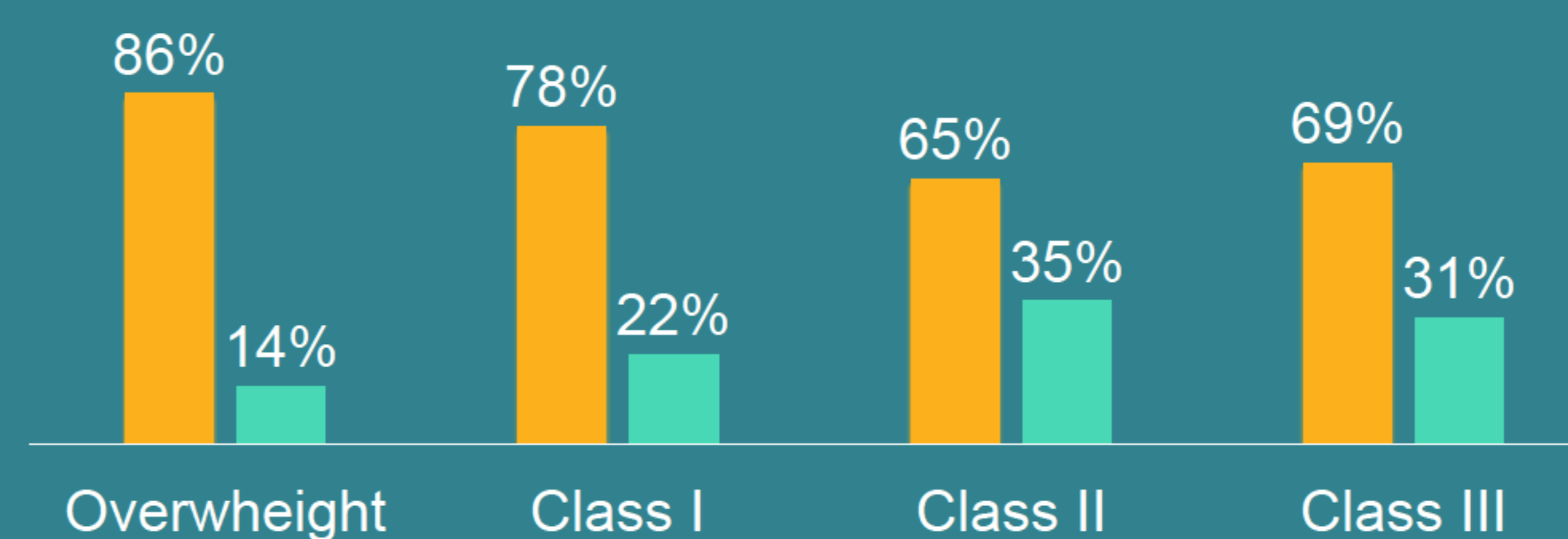
Material and Methods: We retrospectively studied 300 patients, from who data on clinical and demographic parameters, body composition, biochemical profile and abdominal ultrasound was retrieved. We used the criteria of NCEP ATPIII to define metabolic syndrome and patients without metabolic syndrome were considered to be metabolically healthy.

Results:

300 obese patients

208 (69.3%)
metabolically healthy

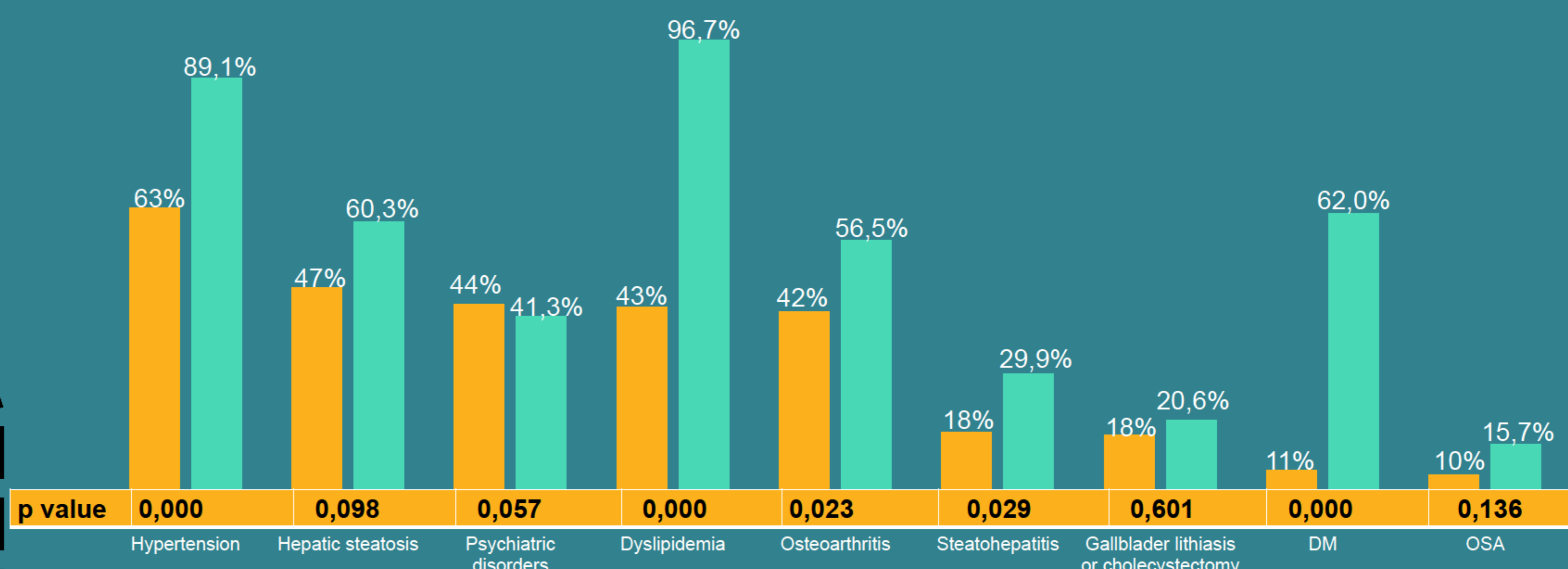
Prevalence of patients metabolically healthy and with metabolic syndrome by body mass index categories



	Metabolically healthy	Metabolic syndrome	p value
Age (years)	40.5±12.6	50.6±11.5	0.501 ^a
Gender			
Feminin (%)	77.9	72.8	0.342 ^b
Masculin (%)	22.1	27.2	
Weight (Kg)	107.2±21.6	106.2±19.0	0.465 ^a
BMI (Kg/m ²)	40.5±6.7	40.9±6.0	0.184 ^a
Fat mass (%)	44.7±7.0	43.7±6.8	0.713 ^a
Waist circumference (cm)	112.4±10.9	115.5±13.0	0.071 ^a
Body mass index			
Overweight	6 (3%)	1 (1.1%)	0.375 ^c
I	36 (17.7%)	10 (11.5%)	
II	53 (26.1%)	28 (32.2%)	
III	108 (53.2%)	48 (55.2%)	
Total cholesterol (mg/dL)	196.7±33.0	186.8±37.8	0.375 ^a
HDL cholesterol (mg/dL)	54.2±12.5	45.5±12.1	0.000 ^d
LDL cholesterol (mg/dL)	121.2±29.4	109.9±33.4	0.010 ^d
Triglycerides (mg/dL)	108.4±51.5	158.5±89.5	0.000 ^d
AST (U/L)	21.7±9.2	26.2±15.5	0.001 ^a
ALT (U/L)	24.1±12.9	33.2±26.3	0.000 ^a
HbA1c (%)	5.4±1.0	6.9±2.0	0.000 ^d
Fasting plasma glucose (mg/dL)	92.0±11.1	128.2±58.5	0.000 ^d
TSH (uIU/mL)	1.9±1.1	2.2±2.1	0.719 ^d
FT4 (ng/dL)	2.3±3.8	2.9±4.9	0.250 ^d
Systolic blood pressure (mmHg)	127.7±16.6	139.3±19.7	0.000 ^d
Diastolic blood pressure (mmHg)	78.4±12.0	84.7±13.2	0.000 ^d

Legend: ^a T-student test; ^b Chi-Square test; ^c Chi-Square test; Monte Carlo simulation

Prevalence of comorbidities according to the metabolic status



- ✓ Prevalence of metabolically healthy obese patients: **69.3%**
- ✓ 77.9% women
- ✓ Age: 40.5±12.6 years
- ✓ Weight: 107.2±21.6 Kg
- ✓ Waist circumference: 112.4±10.9 cm
- ✓ Fat mass: 44.7±7%
- ✓ BMI: 40.5±6.7 Kg/m²

Conclusions: There was a high prevalence of metabolically healthy obese patients, who differed from their non-healthy counterparts regarding glycemic parameters, blood pressure, lipid metabolism, steatohepatitis and osteoarthritis (more prevalent in the patients with metabolic syndrome). However, more than half of metabolically healthy patients had one or more conditions considered to be a comorbidity of obesity. A long-term prospective evaluation will be required to understand if there is a metabolically healthy obesity or if this is inevitably associated with increased morbidity or mortality.

Bibliography:
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