Antropometric indicators of nutritional status and beer consumption in Romania

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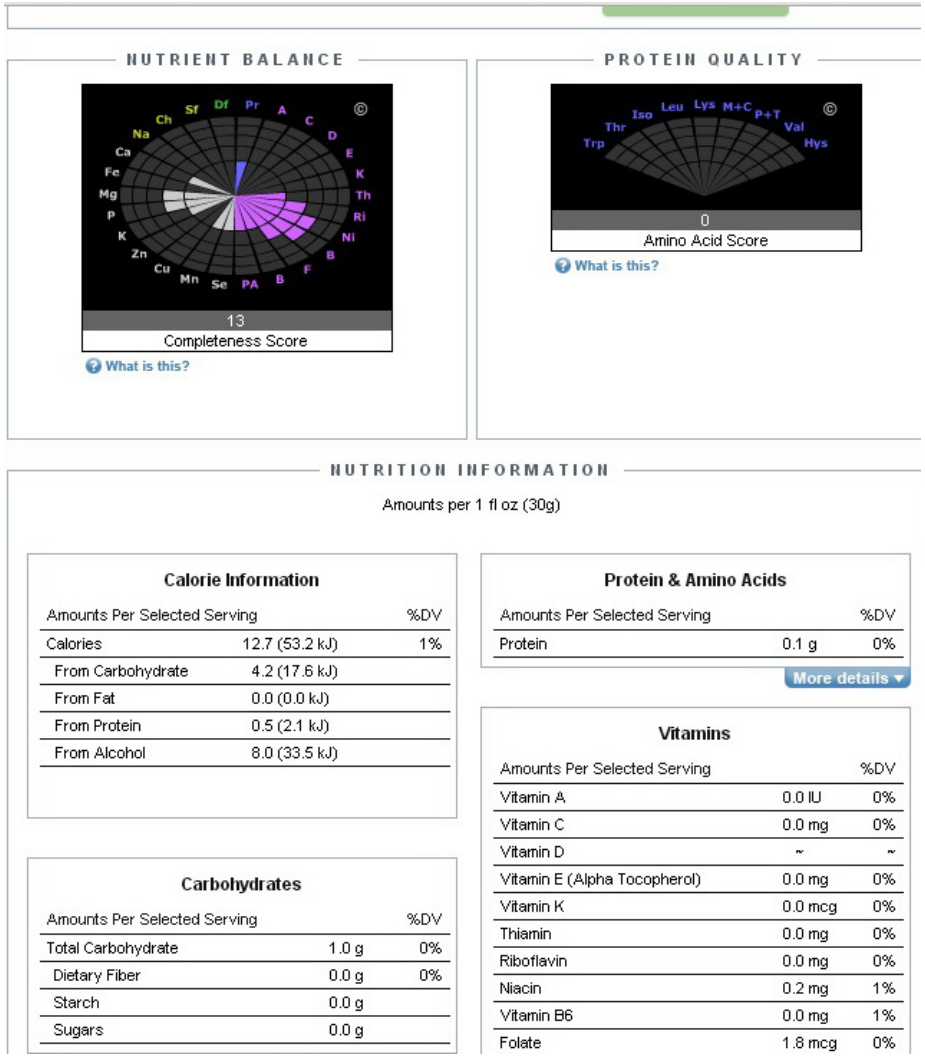
THE CONTEXT

Beer, one of the most consumed beverages around the world

Beer is a drink with many qualities: made from natural ingredients (cereals, hops, yeast and water) and with a low alcohol content, beer is the favorite drink of many people around the world

Nutritional composition

- 45 Kcal /100 ml **(4,5% alcohol)**
- 1% **carbs**
- 0,1% **proteins**
- 0% **lipids**



NUTRIENT BALANCE

PROTEIN QUALITY

NUTRITION INFORMATION

Amounts per 1 fl oz (30g)

Calorie Information

Amounts Per Selected Serving		%DV
Calories	12.7 (53.2 kJ)	1%
From Carbohydrate	4.2 (17.6 kJ)	
From Fat	0.0 (0.0 kJ)	
From Protein	0.5 (2.1 kJ)	
From Alcohol	8.0 (33.5 kJ)	

Protein & Amino Acids

Amounts Per Selected Serving		%DV
Protein	0.1 g	0%

More details

Carbohydrates

Amounts Per Selected Serving		%DV
Total Carbohydrate	1.0 g	0%
Dietary Fiber	0.0 g	0%
Starch	0.0 g	
Sugars	0.0 g	

Vitamins

Amounts Per Selected Serving		%DV
Vitamin A	0.0 IU	0%
Vitamin C	0.0 mg	0%
Vitamin D	~	~
Vitamin E (Alpha Tocopherol)	0.0 mg	0%
Vitamin K	0.0 mcg	0%
Thiamin	0.0 mg	0%
Riboflavin	0.0 mg	0%
Niacin	0.2 mg	1%
Vitamin B6	0.0 mg	1%
Folate	1.8 mcg	0%

Abdominal/central obesity

A huge risk for non-communicable diseases - drives the progression of multiple cardio metabolic risk factors

1. through altered secretion of adipocyte-derived biologically active substances **(adipokines**)
   - adiponectin,
   - free fatty acids
   - interleukin-6,
   - tumour necrosis factor alpha,
   - plasminogen activator inhibitor-1

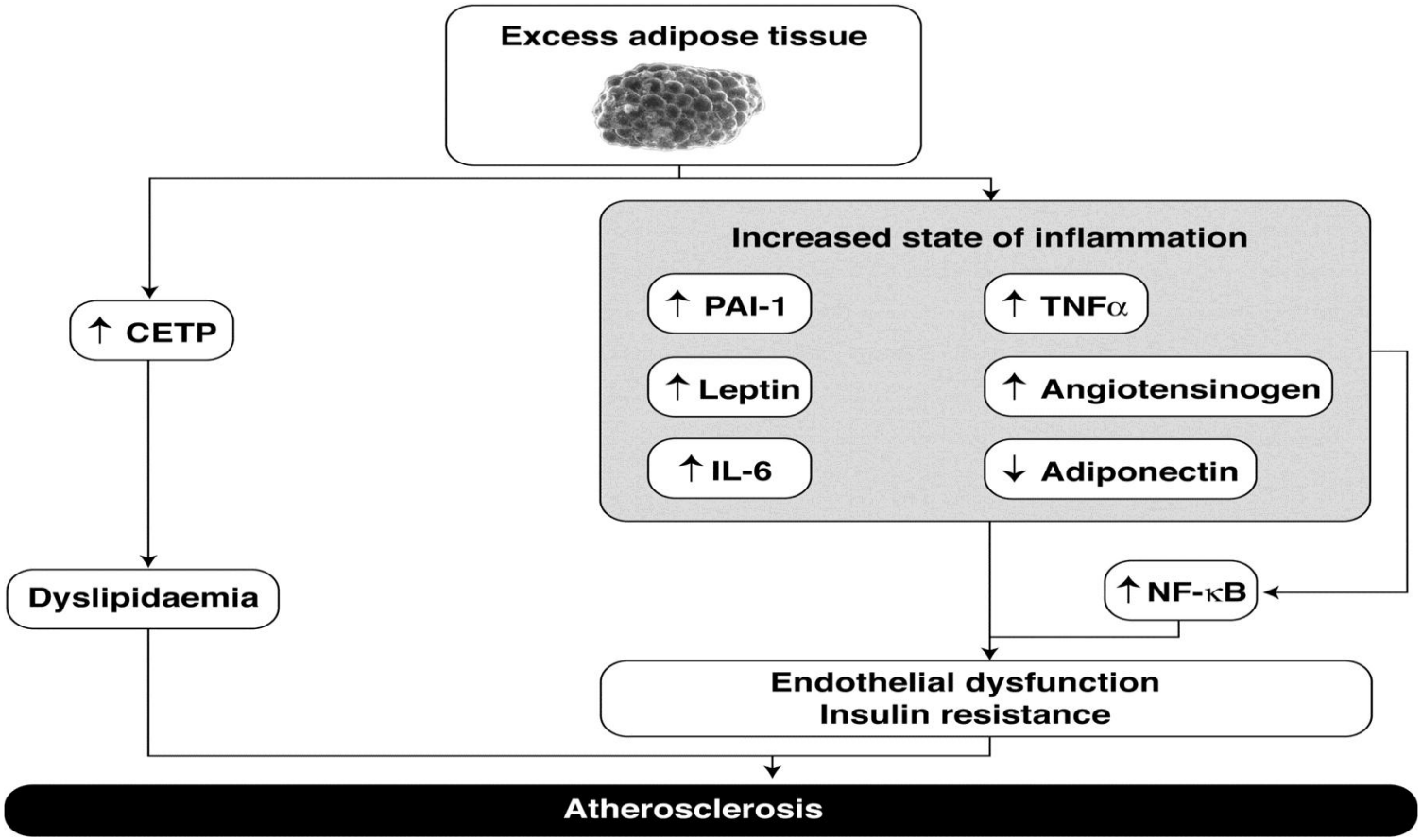
2. through exacerbation of **insulin resistance**

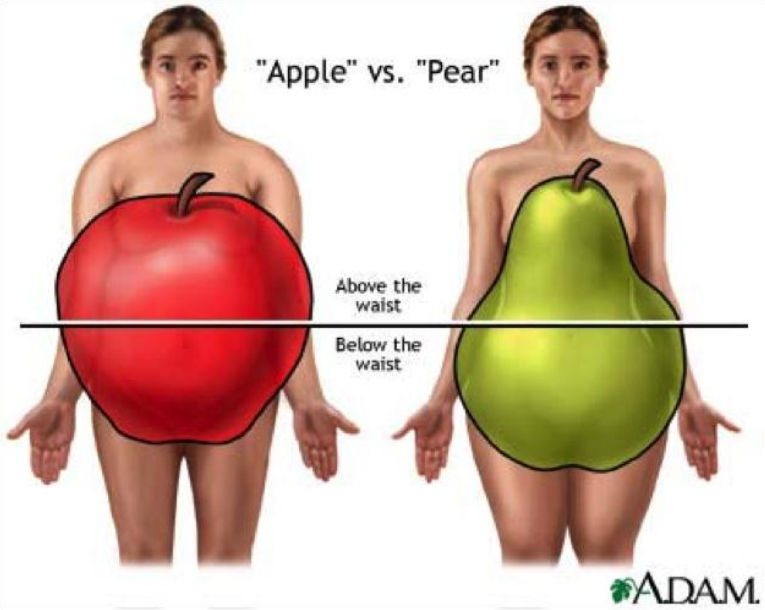
(Despres J - Abdominal obesity: the most prevalent cause of the metabolic syndrome and related cardiometabolic risk-Eur Heart J Suppl (May 2006) 8(suppl B): B4-12); Zhang et all, Abdominal Obesity and the Risk of All-Cause, Cardiovascular, and Cancer MortalityCirculation.2008; 117: 1658-1667

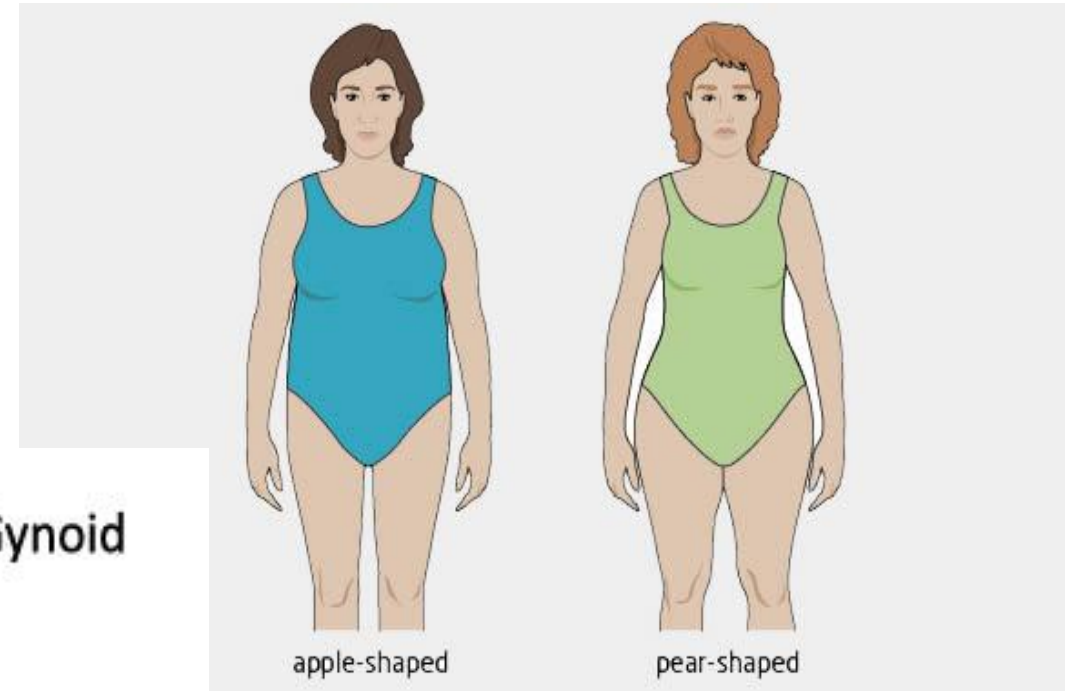
- **Even when BMI is almost normal!!!**

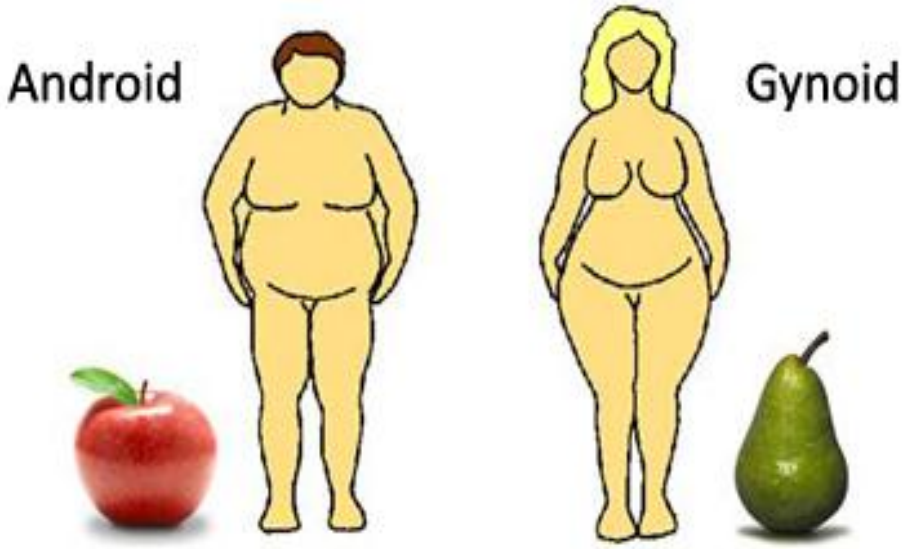
Why?!

(Adipokines—targeting a root cause of cardiometabolic risk JM (2008)




"Apple" vs. "Pear"
Above the waist
Below the waist
A.D.A.M.


apple-shaped
pear-shaped


Android
Gynoid

Normal values for Europeans (WHO)

Abdominal circumference

♂ <94 cm

♀<80 cm

Waist/hip ratio

♂ <0.9

♀<0.85

Popular culture

- Drinking beer = getting a big belly
- Not any kind of belly = beer belly
- Many international studies – contradicted this affirmation
- Well known: in Cech Republic - "**Beer and obesity: a cross-sectional study**"
- Beer – **offers calories as any other food/drink**

In Romania

- There is no study yet about the association between **beer consumption - weight gain**

- Still: the general belief regarding **“beer belly”** exists

THE STUDY

Objectives

Evaluation of the relation:

beer consumption → somatic parameters

- Body mass index
- Abdominal circumference
- Waist/hip ratio

with a special emphasis on **abdominal circumference**

- Moderate beer consumption:
  - M: 660 ml, max. 5% alcool
  - F: 330 ml, max. 5% alcool

The investigation

- Period: **25 March -13 April 2014**
- Target: adult population of Romania
- Type of study: transversal semicantitative
- The sample: **1508 persons**
- Type of sample: **probabilistic**, multistadial stratified, with aleatory selection of households and respondents
- Sample: **validated in relation to data from the National Institute of Statistics and weighted by gender, age, residence and area in Romania**

Data gathering

- Respondents answered in the presence of the investigator at their home to a standardized semiquantitative food frequency questionnaire + demo/physical

- **Hight and weight – autoreported**

- Investigators: 2 measurements **abdominal circumference & hip circumference**

Data analysis

Items: in a database –> analysed by SPSS13.0

- Type of tests:
  - descriptive
  - correlations
  - cluster analysis
  - regressions

Age distribution of respondents

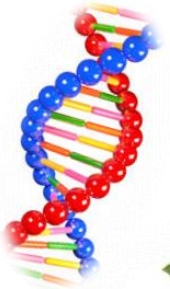
Age categories

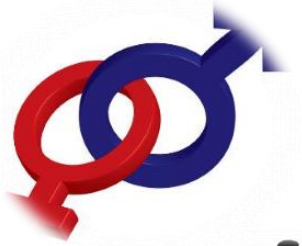
Gender			Frequency	Percent	Valid Percent
man	Valid	18-24	86	11,9	11,9
		25-34	133	18,4	18,4
		35-44	155	21,4	21,4
		45-54	111	15,4	15,4
		55-64	117	16,2	16,2
		65 +	121	16,7	16,7
		Total	724	100,0	100,0
woman	Valid	18-24	81	10,4	10,4
		25-34	128	16,4	16,4
		35-44	149	19,1	19,1
		45-54	112	14,3	14,3
		55-64	133	16,9	16,9
		65 +	180	22,9	22,9
		Total	784	100,0	100,0

BMI, W/H ratio, Abdominal circumference (mean &std.dev)

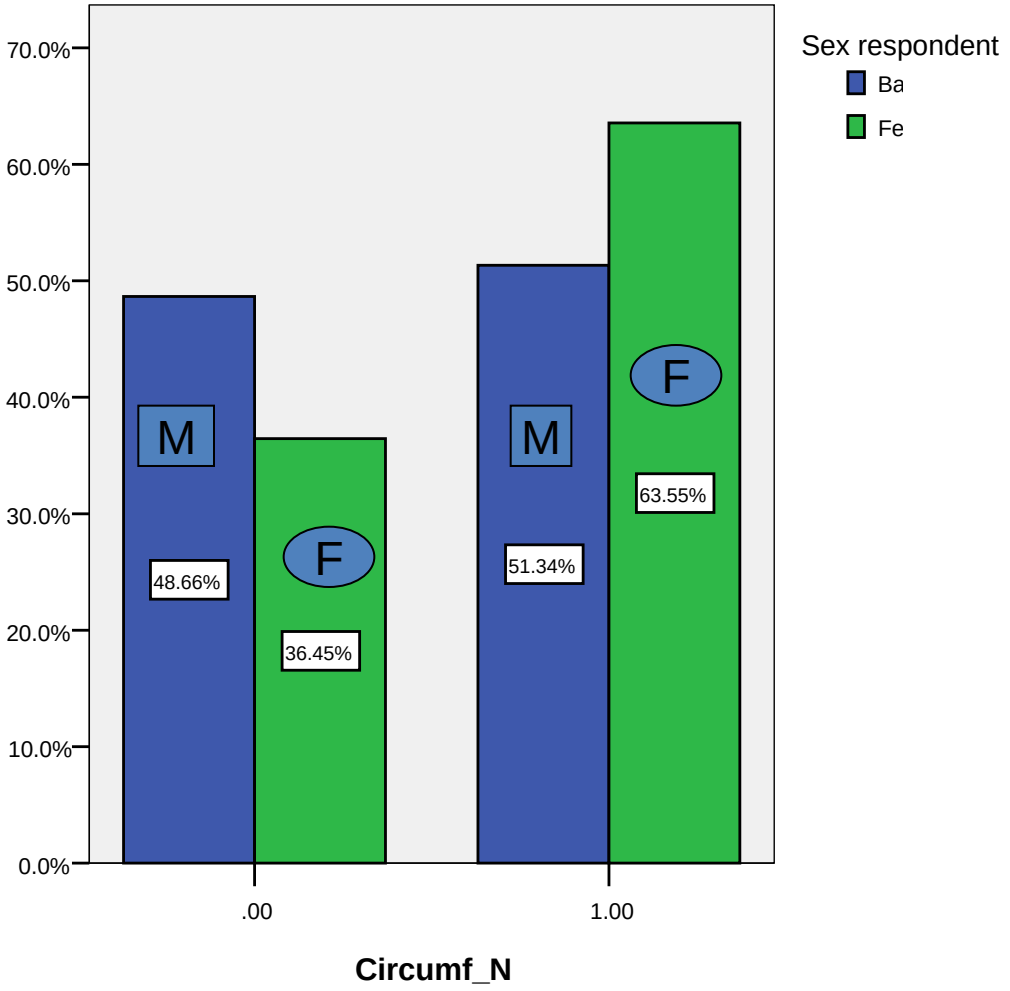
		BMI(Kg/sqm)	W/H ratio	Abd. Circ(cm)
man	Mean	26.3	0.93	94.8
	Std. Dev	4.1	0.11	15.07
woman	Mean	25.03	0.85	86.57
	Std. Dev	4.96	0.11	17.2

Predictors for somatic parameters: BMI, abdominal circumference, waist/hip ratio

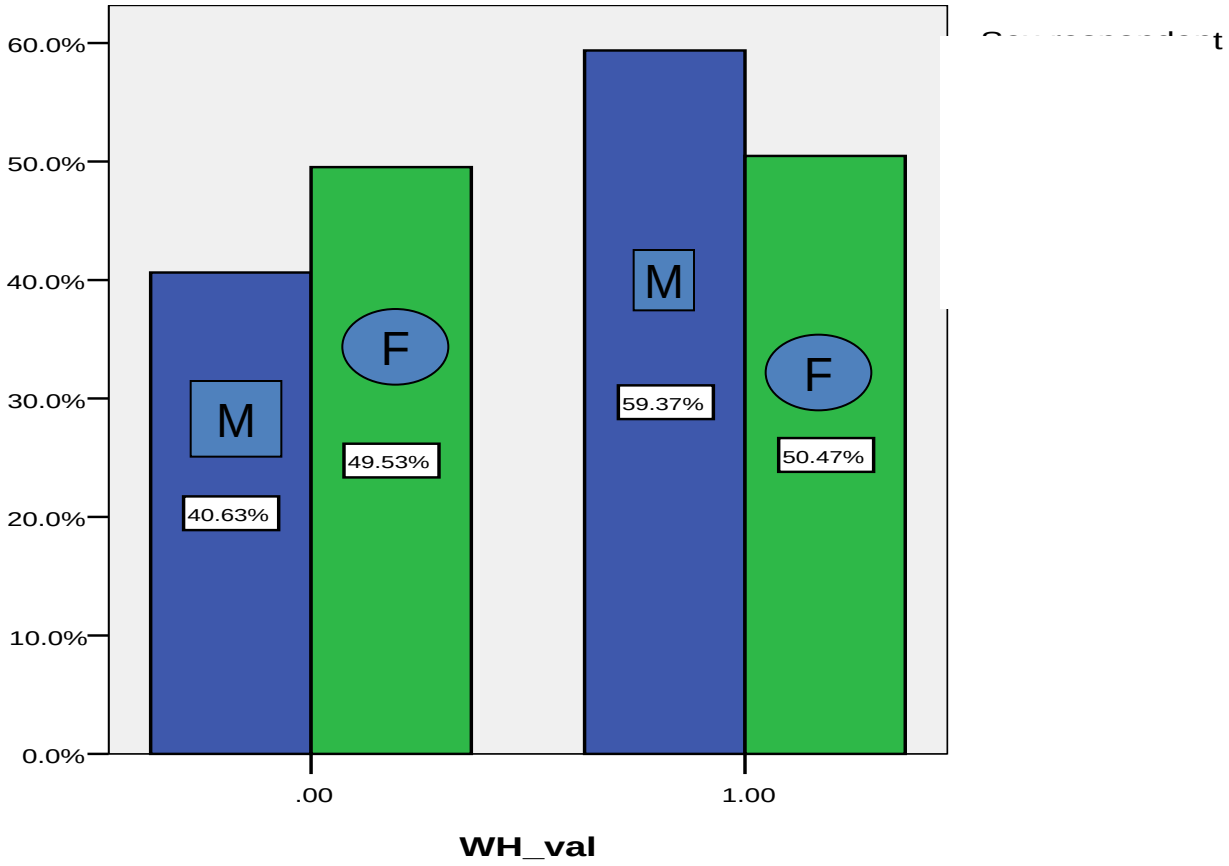




Gender distribution of normal values (cat. 0) and higher values (cat.1) for abdominal circumference



Gender distribution of normal values (cat. 0) and higher values (cat.1) for waist/hip ratio



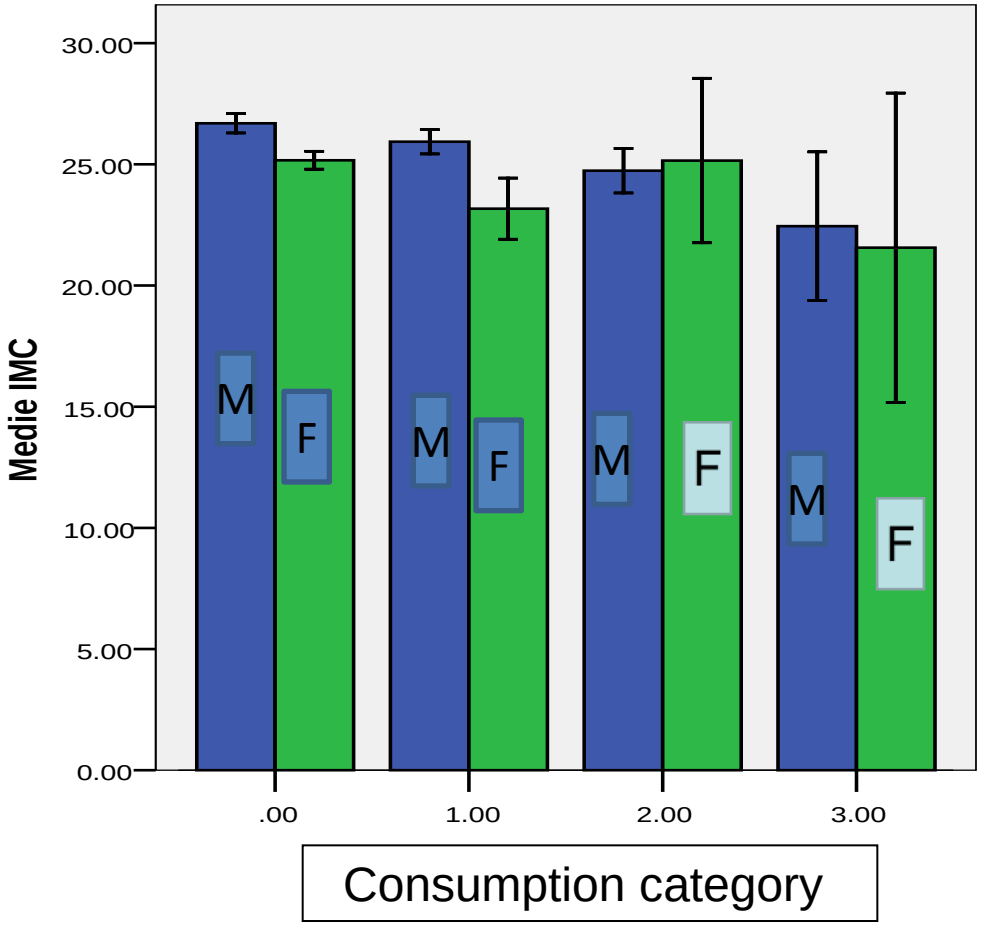
Beer consumption - BMI

Predictors for BMI

Age

Social status

Physical effort



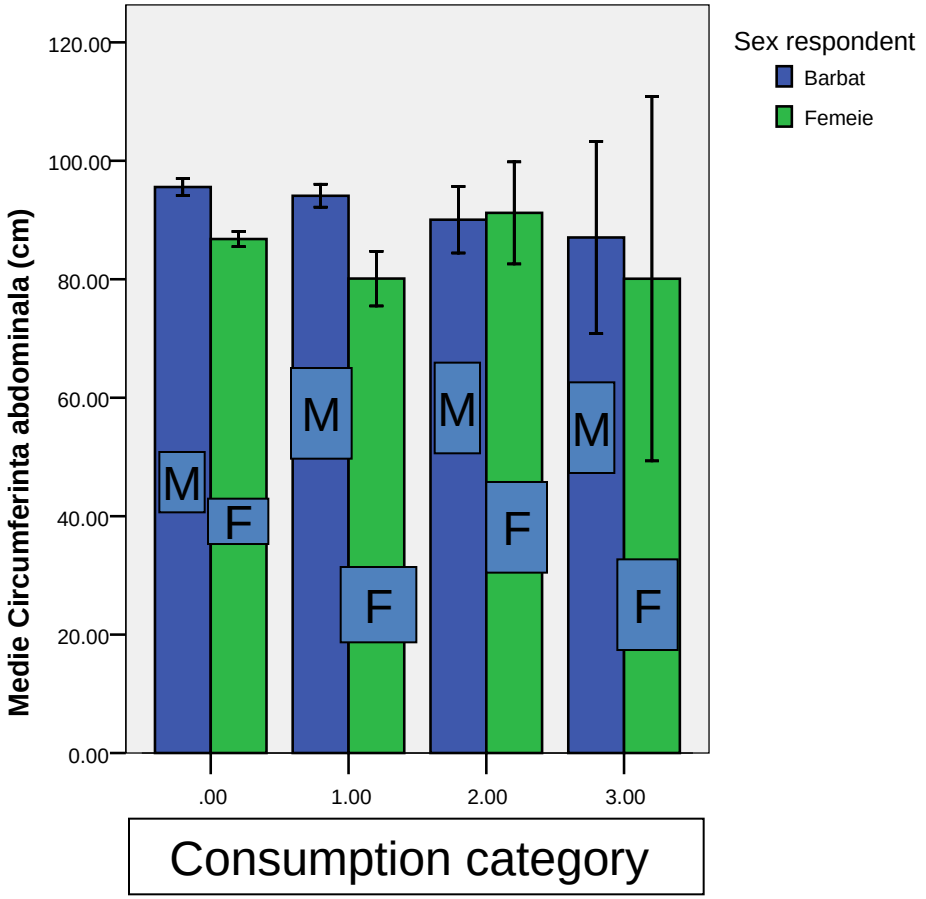
Beer consumption - Abdominal circumference (cm)

Predictors for abdominal circumference

Age

Social status

Physical effort



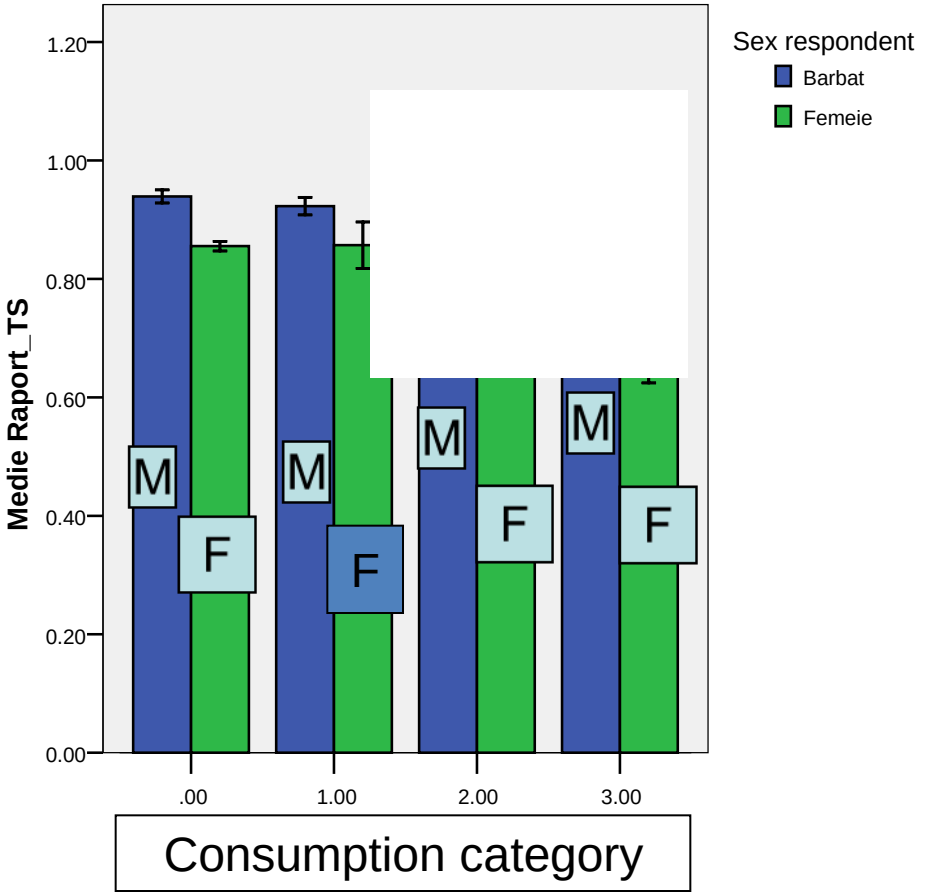
Beer consumption - waist/hip ratio

Predictors for waist/ hip ratio

Age

Social status

Physical effort



RESULTS

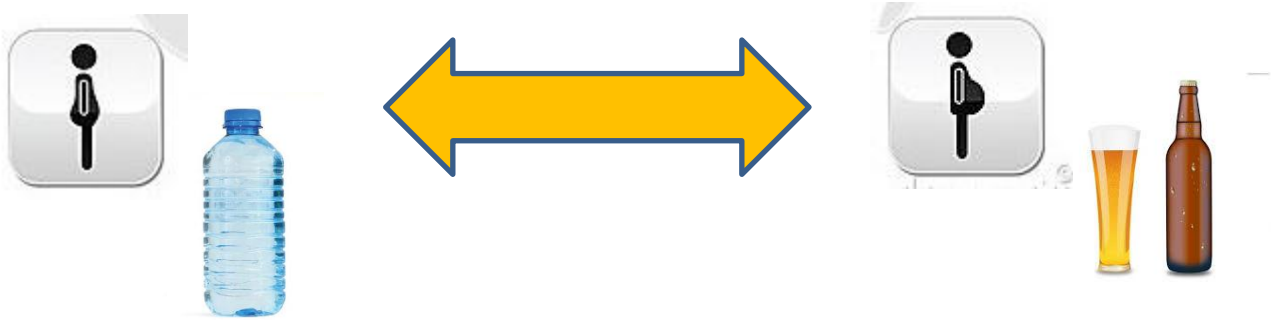
Regression analyzis for predictors

Regression controlled for demographics and physical activity

Abdominal circumference: beer consumption is **NOT** a predictor, whatever the level of consumption

Other results (1)

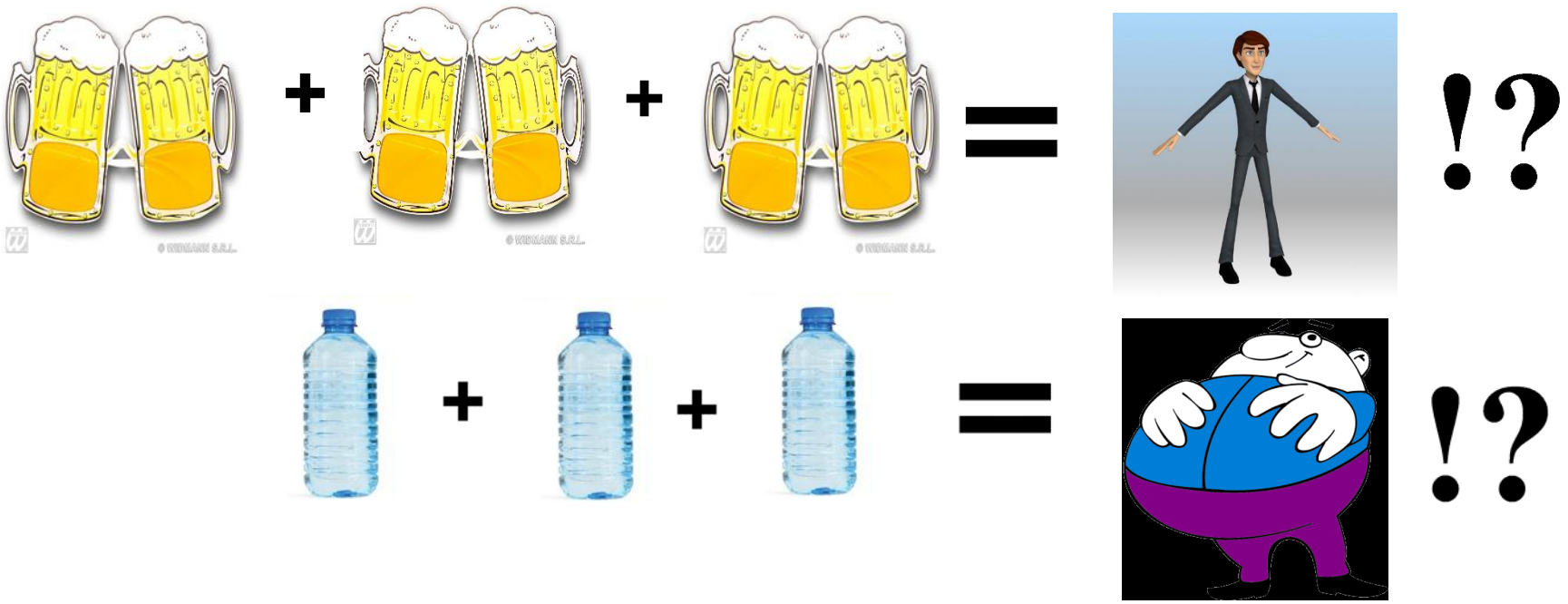
- **None** of the beer class consumption is a statisticaly significant predictor for a higher waist/hip ratio



- **For overweight men** – moderate beer consumption = a significant predictor for a greater waist/hip ratio. compared with no beer consumption (beta =. 116, p=.013).

Other results (2)

- Beer ingestion – semnificative predictor for men`s BMI, but not for all BMI classes



Belonging to groups with medium and high consumption, compared with no beer consumption group = predictor for a lower BMI , (beta-.069, p=.05; respective beta=.071, p=.05).

Other results (3)

- For women = belonging to the low consumtion group, compared with the no beer consumtion - predictor for a lower BMI (beta=-.084, p=.015)

Conclusions (1)

It is unlikely that moderate beer ingestion can cause higher:

- BMI
- Abdominal circumference
- Waist/hip ratio

In general population

Conclusions (2)

- Our study contradicts affirmations like:
  - beer ingestion is per se fattening,
  - beer ingestion determines directly a higher abdominal circumference.

Body parameters have different determinants, beer being just a food like any other without any connection to the so called «beer belly»

THANK YOU FOR YOUR ATTENTION!