Evaluation of the degree of compliance to the Mediterranean diet of workers in Greek Post offices

Evaluation du degre de la conformite du regime Mediterraneen des employes dans les bureaux de poste Grecs

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Mediterranean Pyramid

Red meat: 4 s./month

Eggs, potatoes: 3 s./week

Poultry: 4 s./week

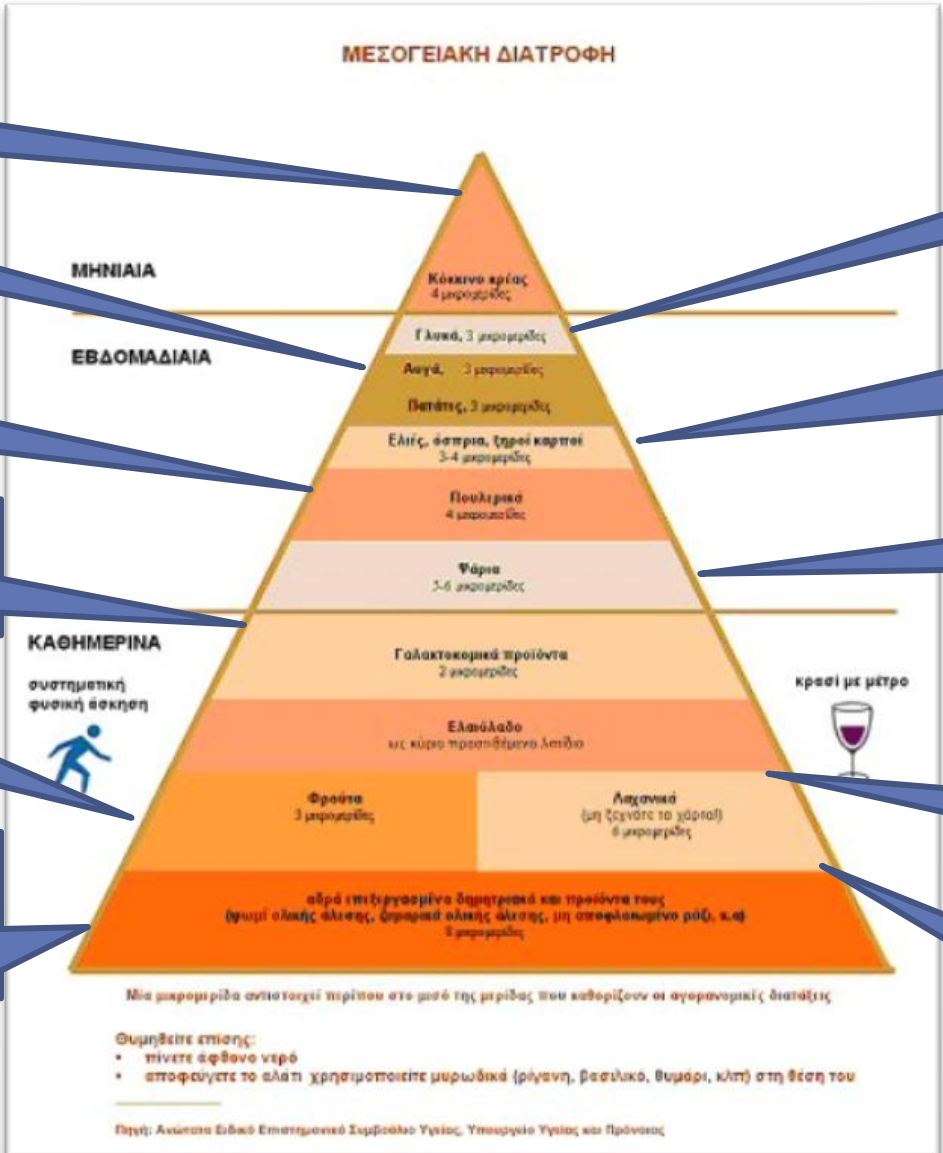Dairy products (0-2%): 2 s./day

Fruit: 3 s./day

Whole grains: 8 s./day

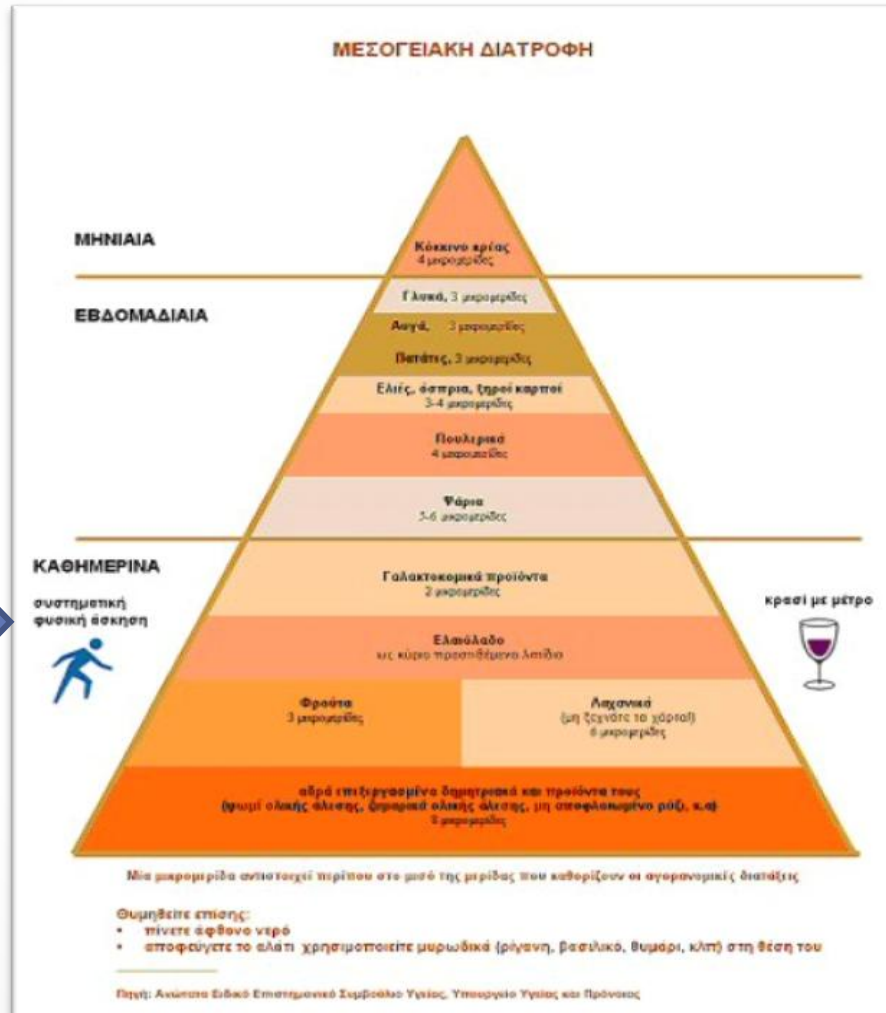Sweets: up to 3 s./week

Olives, legumes, nuts: 3-4 s./week

Fish: 5-6 s./week

Olive-oil: main fat source

Vegetables: 6 s./day

Mediterranean Pyramid

Physical activity

**Men: 2 gl./day
Women: 1 gl./day**

Reference: Ministry of Health, 1999

Mediterranean Pyramid
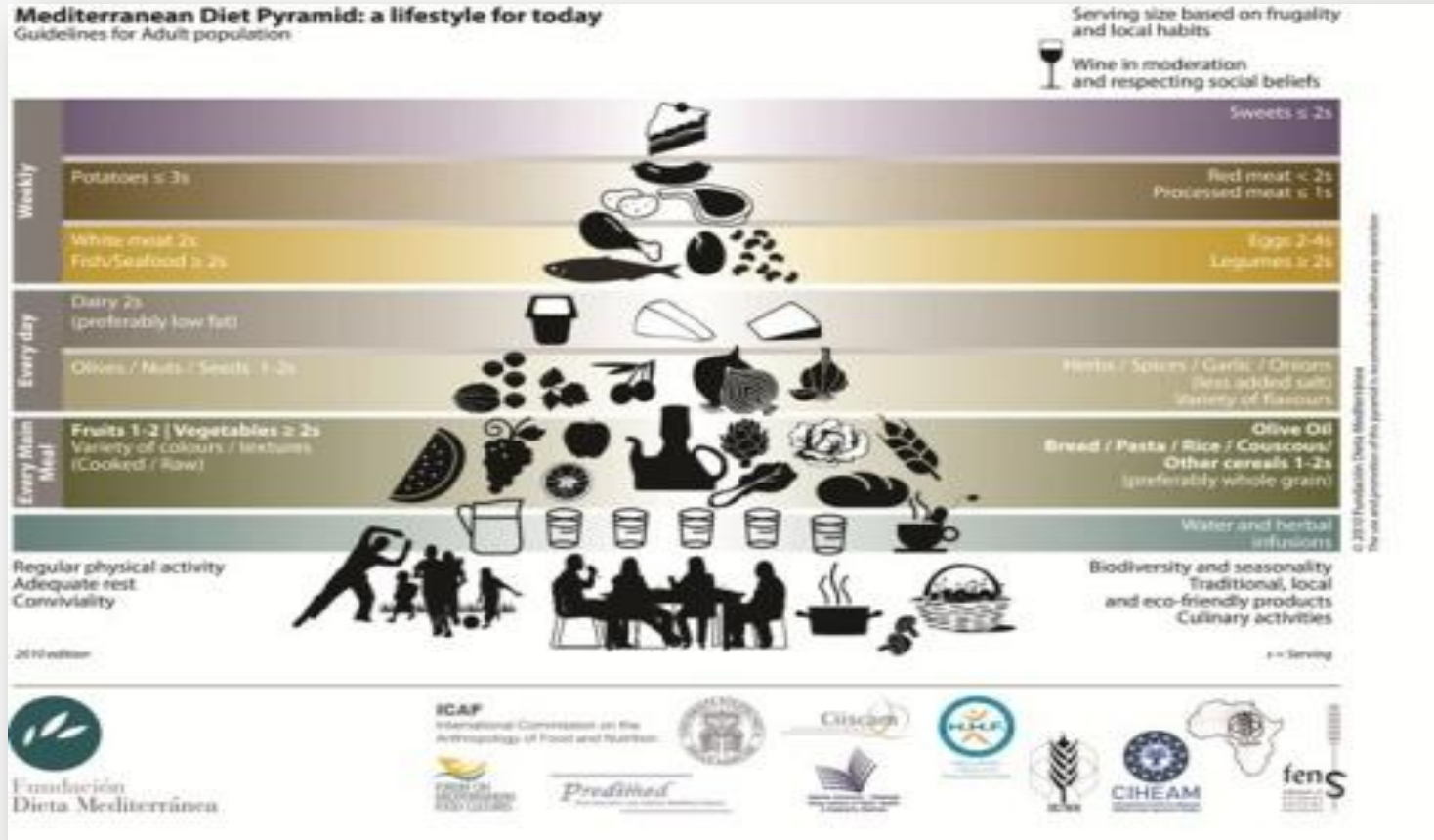
Mediterranean Diet Foundation, Barcelona, 2011

Clinical trials and epidemiological studies

The significant role of the Mediterranean diet

- Seven Countries Study
- EPIC (European Prospective Investigation into Cancer and Nutrition)
- Lyon Diet Heart Study
- Cardio 2000

Meta-analysis: Relative risk for cardiovascular diseases in relation to the adherence to the Mediterranean diet

Sofi F et al. BMJ 2008;337:a1344
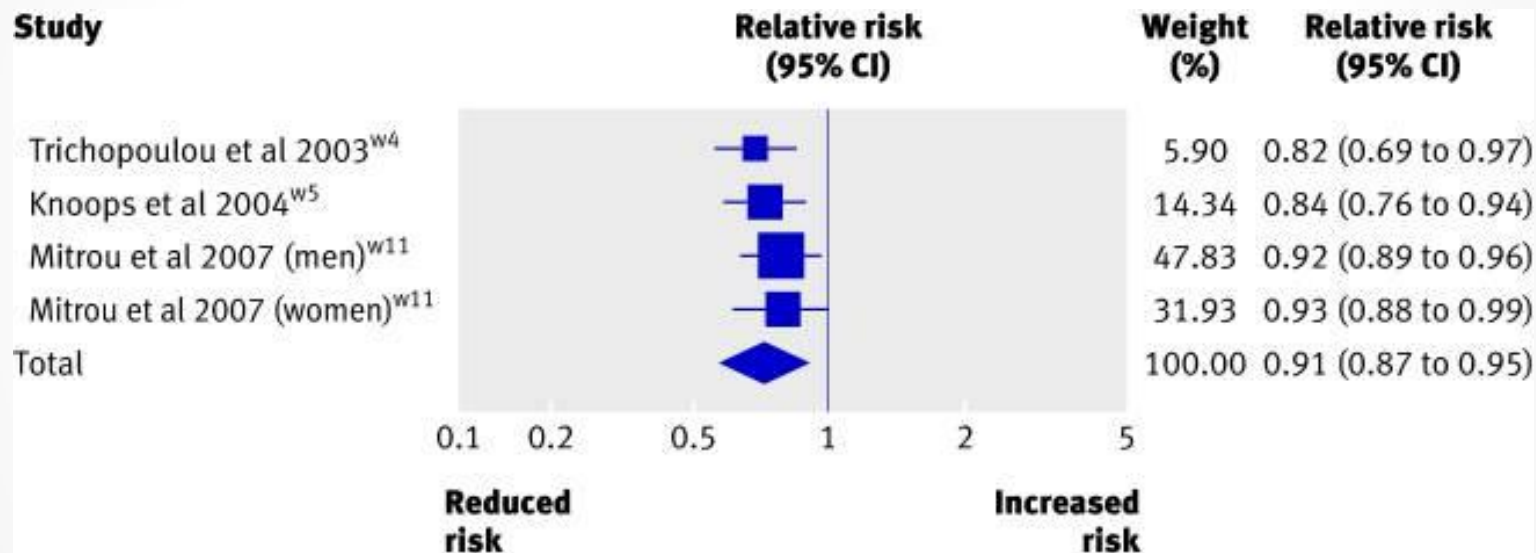
Objective

The aim of the present work was the nutritional assessment of the Hellenic Post Services personnel in relation to the Mediterranean diet model, in order their health to be promoted and protected

Methodology

Study design:

- Cross-sectional study

Sample collection:

- Random procedure
- Population related

Methodology

Sampling duration:

- June 2012-today

Sample:

- 107 men and women

- 14 distribution units, 4 offices of Greek Post service

- 59,4% (Attica region), 40,6% (rest of Greece)

Sample/ Geographical regions

Trikala
n=4

Thessaloniki
n=20

Serres
n=2

Attica
n=63

Arkadia
n=3

Lakonia
n=15

Nikos Lambrinos, Dept. of Primary Education, AUTH©
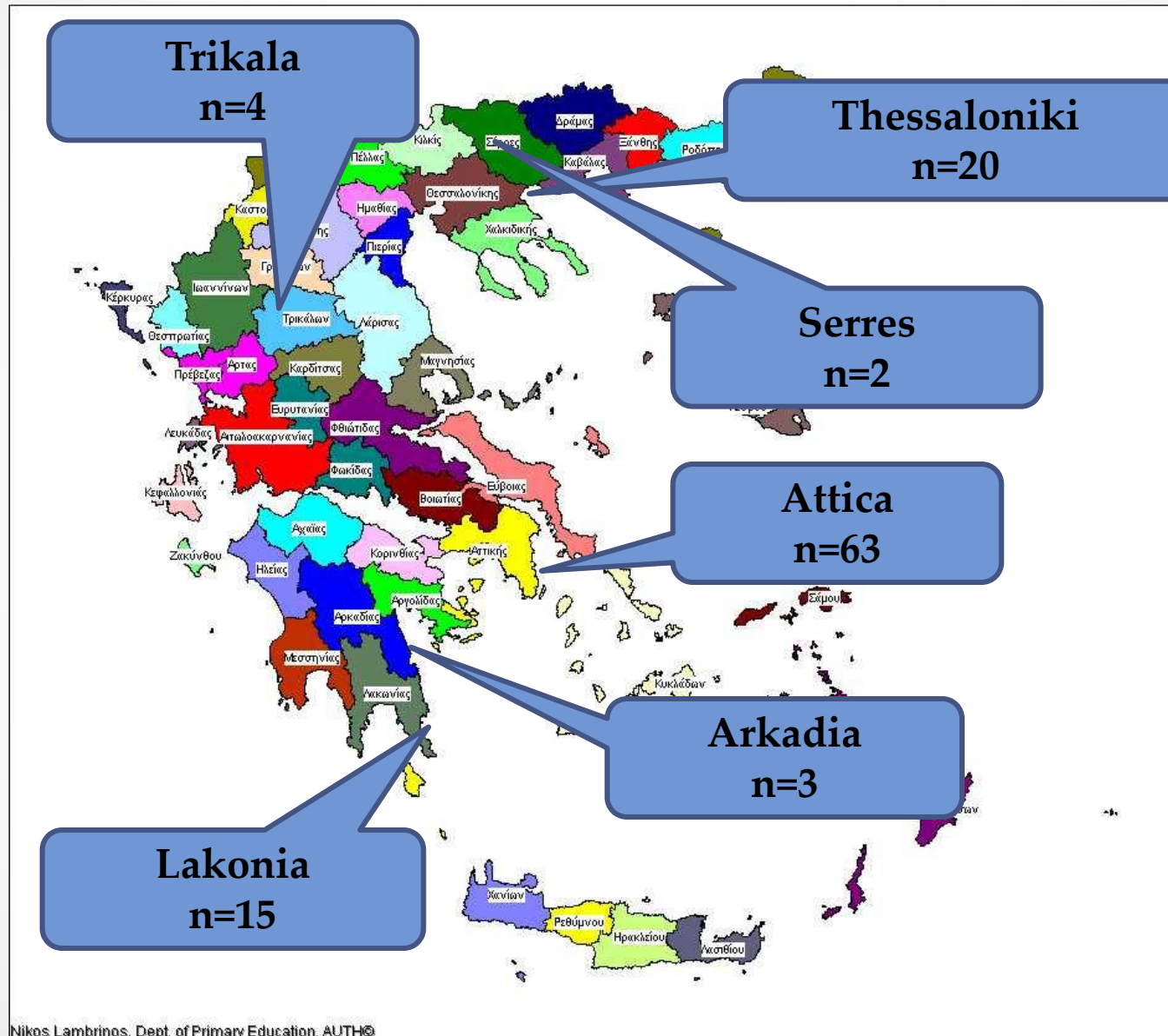
Methodology

Questionnaire

- Demographical characteristics

- Anthropometric characteristics

- Medical history

- Pharmaceutical history

- Smoking habits

- Dietary habits (FFQ)

- Physical activity (IPAQ)

Evaluation of the degree of compliance to the MD using the MedDietScore

How often do you consume the following types of food?	Consumption frequencies (Restaurant servings/month)				
Whole grain products (Rice, pastas, bread)	Never 0	1-6 1	7-12 2	13-18 3	19-31 4	>32 5
Potatoes	Never	1-4 1	5-8 2	9-12 3	13-18 4	>18 5
Fruit	Neve		5-8	9-15	16-21	>22 5
Vegetables					2	>33 5
Legumes						>6 5
Fish						>6 5
	0	1	2	3	4	5
Poultry	≤3 5	4-5 4	6 3	7-8 2	9-10 1	>10 0
Red meat and similar products	≤1 5	2-3 4	4-5 3	6-7 2	8-10 1	>10 0
Full-fat dairy products	≤10 5	11-15 4	16-20 3	21-28 2	29-30 1	>30 0
Use of olive-oil while cooking (times/week)	Never 0	Seldom 1	<1 2	1-3 3	3-5 4	Daily 5
Alcohol beverages (mL)/day (100mL= 12g ethanol)	<300 5	300 4	400 3	500 2	600 1	>700 ή 0 0

Grading scale: 0-55
Mean: 27,5 -> average adherence to the MD

Foods	Recommendations	Your consumption	Suggested adjustments
Bread, pasta, rice and other whole grains	8 servings/day	6-7 servings/day (not whole grains)	↑
Vegetables	6 servings/day	3-6 servings/week	↑
Fruit	3 servings/day	3-6 servings/week	↑
Olive oil	Main fat source	Main fat source	✓
Dairy products	1-2 servings/day	1 serving/day	✓
Fish	2 servings/day	1-2 servings/week	✓
Poultry	1-2 servings/day	1-2 servings/week	✓
Olives, legumes and nuts	3-4 Servings/week	1-2 servings/week	↑
Potatoes	Up to 3 servings/week	1-2 servings/week	✓
Eggs	Up to 3 servings/week	Never/Seldom	↑
Sweets	Up to 3 servings/week	1-2 servings/week	✓
Red meat	1-2 servings/month	2-3 servings/week	↓

Personal letter with dietary advice (example)

Evaluation of IPAQ's answers (example)

Physical activity

- Short recommendation for physical activity

- Ranking to high, medium or low physical activity performance

- In any case, the proper recommendation is given

Total questionnaire final evaluation (example)

The research team recommend you :

▪ To increase the fruit and vegetables consumption to 3 servings/day and 6 servings/day respectively

▪ To choose low/non fat dairy products

▪ To increase the consumption of whole grain products (pastas, rice, bread, cereals) to 3 servings/day since the contained fibers increase the sense of saturation and contribute to the proper functioning of the gut. Increase the legume consumption to 2-3 servings/week, for the same reason.

▪ To increase the unsalted nut consumption to 3 servings/week, as they contain beneficial fat acids

Total questionnaire final evaluation (example)

- To decrease the red meat consumption to 1-2 servings/month, as they contain the harmful saturated fat acids

- To prefer skinless meat and avoid the visible fat of meat. The removal of skinning before cooking is recommended

- To include breakfast in your daily routine as it offers you the necessary energy and contributes to metabolism activation

- To have small and frequent meals (three main and two snacks)

- Finally, we recommend the daily consumption of red wine (2 glasses/day), as it is rich with antioxidants

Statistical analysis

Normality tests

- Kolmogorov-Smirnov, Shapiro-Wilk tests

Quantitative variables

- t-test Student
- Mann-Whitney U-test
- Kruskal-Wallis test

Multiple linear regression

- 'Stepwise' method

Results/Discussion

Descriptive sampling characteristics

		N	%
Sex	Men	65	61
	Women	42	39
Age (years)	18-36	14	16
	37-56	62	79,5
	57-99	13	14,5
Educational status	Elementary education graduates	1	1
	High-school graduates	60	60,6
	University graduates	38	38,4
Family status	Single	21	20,8
	Married	75	74,3
	Divorced	5	4,9
Residence	Attica	63	58,9
	Rest of Greece	44	41,1

Data on the presence of disease and medication

	N	%
Hypertension	14	13,7
Hypercholesterolemia	8	7,9
Diabetes mellitus	7	6,9
Cardiovascular diseases	3	2,9
Kidney failure	1	1
Cancer	0	0
Antihypercholesterolemics	6	5,8
Antihypertensives	11	10,7
Antidiabetics	5	4,9
Insulin	2	1,9

			Total
Smoking, n (%)			33 (34,...)
Physically active, n (%)			82 (78)
Body Mass Index(kg/m^2), mean ± s.d.			26,59 ± 4,6
Body Mass Index, n (%)	Normal-weighted (BMI<25)		31 (36,9)
	Over-weighted (25≤BMI<30)		38 (45,24)
	Obese (BMI≥30)		15 (17,86)

Employees' physical activity

- 78% of employees: regular exercise > 5 hours/week

- Overvaluation of physical activity?

- Work profile

- <u>Tzormpatzakis N, 2007:</u>

   Greek people's profile ⟶ more active

ion frequency per week

	Median
MDS	32
Whole grains	1,5
Potatoes	1,5
Fruit	7,5
Vegetables	9
Legumes	1,5
Fish	1
Poultry	1,5
Red meat	3,5
Full-fat dairy products	1,5
Olive-oil	7
Alcohol beverages	1,5

Grading scale: 28-41
Average to good adherence

White bread consumption

Traditional perceptions?
Ignorance about the harmful role of SFA

Benetou V. et al., 2008
Maintenance to traditional use of olive oil

	MDS		
	Median	**IR**	**p-value**
Sex Men	32	6	0,848
Women	32	9,25	
AGE 18-36	27	6,5	
37-56	32,5	6,25	0,011
57-99	32	6	
Educational status Elementary ~~ation~~ High-	32	7	0,262
Family status			
Residence			
Rest of Greece	31	7	
Employee state Distribution			
Office	32	7	0,752
	31	8	

Filippidis FT et al., 2009
- Increase of MDS in relation to age
- Elderly: higher fish consumption

Multiple linear regression

$$y = a + bx$$

where:

$$a = \frac{\sum y - b \sum x}{n}$$

$$b = \frac{n \sum (xy) - (\sum x)(\sum y)}{n \sum x^2 - (\sum x)^2}$$

First model variables:

- Sex
- Age
- Residence regions (Attica, rest of Greece)
- Educational status
- Employee state (distribution or office)
- Employee rank
- Working years
- Body Mass Index
- Family status
- Smoking

Last model of multiple linear regression:

Analysis of variance (ANOVA)

R square = 0,985

P-value = 0,000<0,5

Depended

	B	
Sex	2,964	0,024
Age	0,585	0,00
Educational status	3,813	0,
Employee rank	-6,653	0,

Attica Study
MDS women > MDS men

Grammatikopoulou et al, 2006; Trichopoulou et al., 2003
Westernization of young people's dietary habits

Tsartsali et al., 2009
Knowledge for the beneficial role of the MD -> Key-point for the adherence

Coincidential fact

MDS = 2,964*Sex + 0,585*Age + 3,813*Educational status -6,653*Employee rank

Conclusions

- It seems that people in Greece tend to have a more westernized dietary pattern, richer in energy and saturated fat acids in relation to the Mediterranean diet pattern

- Creating policies and campaigns in order to inform the public about the benefits of the Mediterranean diet on health, is of significant importance

Limitations

- Cross-sectional study
- Bias on the part of the researcher
- Overvaluation of physical activity

Merci beaucoup!