

NUTRITION AND HIDDEN SALT CONTENT IN SCHOOL CHILDREN MEALS CARDIOVASCULAR DISEASES RISK FACTORS



Vesna Jureša, Vera Musil, Davor Petrović

Andrija Stampar School of Public Health
Medical School University of Zagreb

Zagreb, 21.11.2008.

Goal



- To determine nutritional and behavioral differences in obese, overweight and normal weight children attending first grade elementary school.

Participants

- Children from 40 elementary schools
- Sample was stratified by settlements population size
- 960 pupils
 - 493 (52, 4%) boys
 - 467 (48, 6%) girls



Methods

- Anonymous questionnaire (completed by parents)
75 questions:
 - computer and internet use, television,
 - eating and drinking habits
 - children's health status
 - parents education
- Anthropometric measurements:
 - height and weight
 - body mass index (BMI)
 - blood pressure,
 - waist circumference .
- Statistic analysis:
 - descriptive methods, factor analysis, factor discriminate analysis.
- Criteria for obese and overweight
 - BMI 'Cole standards' (T J Cole, M C Bellizzi, K M Flegal, W H Dietz, BMJ. 2000 May 6;320(7244):1240):
 - Group 1 – normal weight**
 - Group 2 - overweight**
 - Group 3 - obese**



RESULTS

Participants by Gender and BMI

GENDER		BMI Group			Total
		1	2	3	
Boys	N	384	68	41	493
	%	77,9	13,8	8,3	100,0
Girls	N	376	59	32	467
	%	80,5	12,6	6,9	100,0
Total	N	760	127	73	960
	%	79,2	13,2	7,6	100,0



RESULTS

Questions regarding nutrition



significant

overweight and obese/normal weight

- have less meals per day $P > 0.05$
- eat less fruits $P > 0.05$
- TV viewing $P > 0.05$
- eat fast food five and more times per week $P = 0.0009^*$
- spend more time using computer $P = 0.0039^*$

RESULTS

Factor and discriminant analysis

- Factor analysis excluded 12 factors with cumulative loading of 60% variability

- Discriminant analysis

Predictive variables

12 Factors

Structure Matrix

	Function 1
Factor 3	0,623
Factor 2	-0,465
Factor 7	0,304
Factor 12	-0,282
Factor 5	0,260
Factor 11	-0,067



$P = .010$ (chi square = 42,890 df = 24)

Discriminant variables

BMI

	Group centroid
Group 1 – normalweight	,089
Group 2 – overweight	-,315
Group 3 – obese	-,376

RESULTS

Factor's names

in Function 1 of discriminant analysis



- Factor 2 *“Parents education”*
- Factor 3 *“Order of birth and number of children in family”*
- Factor 5 *“Physical activity”*
- Factor 7 *“Fruit and vegetable”*
- Factor 11 *“Alcohol”*
- Factor 12 *“Time spent playing video and computer games”*

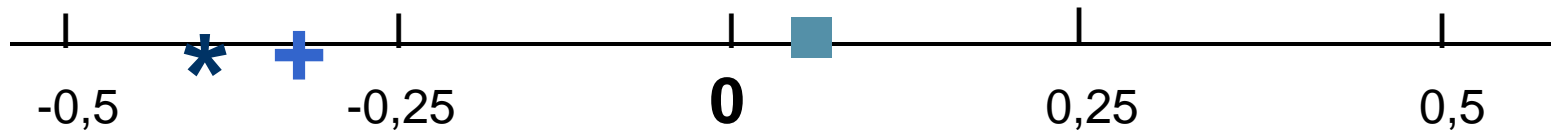
RESULTS

Discriminant function at group centroids

Function 1

higher number of children in the family and higher order of birth, lower education of parents, they eat more vegetables and fruits, spend less time playing computer games, have more physical activity, drink less alcohol with their meals.

NORMALWEIGHT (0,089)



OVERWEIGHT (-,315)

OBESE (-0,376)

lower number of children in the family and lower order of birth, higher education of parents, they eat less vegetables and fruits, spend more time playing computer games, have less physical activity, drink more alcohol with their meals.



CONCLUSION

children are described with



Normalweight

Overweight and obese

- | | | |
|---|-------------------------------------|---|
| ↑ | ■ number of children in the family | ↓ |
| ↑ | ■ order of birt | ↓ |
| ↓ | ■ education of parent | ↑ |
| ↑ | ■ eat vegetables | ↓ |
| ↑ | ■ eat fruits | ↓ |
| ↓ | ■ spend time playing computer games | ↑ |
| ↑ | ■ physical activity, | ↓ |
| ↓ | ■ drink alcohol with their meals | ↑ |

Coments



- **We could assume that parents with lower education spend more time at home with their children (more time for cooking?).**
- **“Fast food” stereotype and sugar consumption were not proven in this study.**
- **Multicentric studies with larger number of participants are needed to establish is that a pattern which describes these groups.**