

T5:PS.196

**Overweight and obesity in serbian children**Srdic B<sup>1</sup>, Obradovic B<sup>2</sup><sup>1</sup>Department of Anatomy, Faculty of Medicine Novi Sad, Serbia;<sup>2</sup>Department of Biomechanics, Faculty of Sport and Physical Education Novi Sad, Serbia

Having in mind increasing prevalence of childhood obesity and its role in the development of adult obesity and chronic diseases, the aim of this study was to analyze prevalence of overweight and obesity among Serbian children.

In a cross-sectional sample of 3060 children (1637 boys and 1423 girls) aged 4-15 years, we analyzed BMI values and body fat percent (BF%). Nutrition level was assessed using CDC criteria for BMI values, and BF% was estimated according to equation given by Slaughter et al. (1988).

Our results revealed overweight and obesity in 22.12% of children (23.95% of boys and 20.03% of girls). 9.90% of boys and 6.18% of girls had BMI above 95<sup>th</sup> percentile. Highest prevalence of overweight obesity was found in 7-9-year-old boys and 8-9-year-old girls. Boys had significantly lower BMI comparing to girls (17.53±3.10 vs. 17.20±2.98 kg/m<sup>2</sup>, respectively), while girls had significantly higher BF% (17.54±5.25 vs. 16.05±7.73 %, respectively). Using criteria for BF% values given by Ellis et al (1996) 12.09% of boys and 9.42% of girls had BF% above 25%, while 6.96% of boys and 2.67% of girls had BF% above 30%.

The findings of this study may be helpful in identifying children at risk for adolescent obesity and obesity-related disorders, as well as in providing an opportunity for earlier intervention.

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**Formulation and production of fortified Barbari bread with different Ca sources**Azar, M<sup>1</sup>, Fazeli, F<sup>1</sup><sup>1</sup>Faculty of Nutrition Sciences & Food Technology, Shahid Beheshti University, M.C, Tehran, Iran

**Background:** Adequate calcium (Ca) intake during the crucial growing years maximizes peak bone mass and thus delays the onset of osteoporosis later in life. In addition, Ca plays a protective role against blood hypertension and colorectal cancer. Dairy products, a naturally rich Ca source, are the major source of Ca in our diet. However many people avoid consuming milk, because of economical problems and who are lactose intolerant. For these people, Ca-fortified nondairy foods can be a significant source of Ca. A number of foods, including bread, staple food, can be fortified with Ca. In this study, formulation and production of fortified Barbari bread with different Ca sources was investigated in 2007.

**Materials and Methods:** In order to, different kind of Barbari breads were prepared with flour fortified with Ca sources such as Ca carbonate, Ca sulfate, whey powder and Ca carbonate plus lactose. Ca was added to flour at two levels: 500 and 1000 mg/ 100 g of flour. One bread was also prepared using ordinary flour. Reological tests were done by Farinograph and Extensograph, bread staling by organoleptic and Viscoelastograph and a amount of Ca was measured by Atomic Absorption.

**Results:** Results of Farinograph and Extensograph tests indicated strength of dough. Results of Farinograph test indicated that the percent of water absorption, dough development time, dough stability and valorimeter value will increase by adding Ca, while the degree of dough softening in 10 and 20 minutes, will reduce. Also atomic absorption spectrophotometry test showed that retaining of Ca in breads was significant (P< 0.05).

**Conclusion:** According to sensory evaluation and Viscoelastograph, CaCO<sub>3</sub>, CaSO<sub>4</sub> and whey powder are preferred sources of Ca for the fortification of cereal-based foods as they had no adverse affect on bread quality. CaCO<sub>3</sub> is higher in Ca than CaSO<sub>4</sub>. It is also less expensive. For these reasons, Ca carbonate is a preferred Ca source for fortifying bread.

**Key words:** Fortification, Barbari bread, Calcium carbonate, Calcium sulfate, Whey powder

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**Anthropometric indicators of abdominal obesity and cardiovascular risk factors**<sup>1</sup>Srdic B, <sup>2</sup>Stokic E, <sup>3</sup>Tomic-Nagic D<sup>1</sup>Department of Anatomy, Faculty of Medicine Novi Sad, Serbia<sup>2</sup>Department of Endocrinology, Diabetes and Metabolic Disorders, Institute of Internal Medicine Novi Sad, Serbia

Abdominal obesity increases the risk for development of cardiovascular disease and diabetes type 2. Several anthropometric measures have been proposed as a good predictors of cardiovascular risk and it is still under discussion which measure best reflects the level of cardiovascular risk. The aim of our study was to examine correlations between anthropometric indicators of abdominal obesity and metabolic risk factors in regard to the nutritional level, as well as in regard to age.

Study group consisted of 881 subjects (291males and 590 females). Nutritional level was assessed using BMI, while adiposity (BF%) was assessed using bioelectrical impedance method. We analyzed following abdominal anthropometric indicators: waist circumference (WC), waist to height ratio (WHTR), sagittal abdominal diameter (SAD) and SAD to height ratio (SADH). Blood pressure, cholesterol, triglycerides, HDL- and LDL-cholesterol, fasting glucose, index of atherosclerosis, fibrinogen and uric acid were measured.

SAD and SADH were better predictors of risk in normal weight males, while WC and WHTR were better predictors in normal weight females. In overweight and obese subjects WC and WHTR correlated stronger with risk factors, comparing to SAD and SADH. Reliability of all anthropometric indicators in risk prediction decreased with aging in males, while in females relationship between anthropometric indicators and risk factors was stronger in subjects younger than 30y and in subjects older than 50y. SAD was the best predictor of BF% in normal weight males and in overweight males. Best predictors of BF% in normal weight and overweight females were WC and WHTR, respectively.

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**Comparison of the relationship between body mass index and relative total and central adiposity in North Africans, West Africans and Caucasians**Gartner, A<sup>1</sup>, Traissac, P<sup>1</sup>, Méjean, C<sup>1</sup>, Savy, M<sup>1</sup>, Landais, E<sup>1</sup>, Dioum, A<sup>1</sup>, Delpeuch, F<sup>1</sup>, Maire, B<sup>1</sup>, Schutz, Y<sup>1,2</sup><sup>1</sup>Institut de Recherche pour le Développement, Montpellier, France; <sup>2</sup>University Cheikh Anta Diop, Dakar, Senegal; <sup>3</sup>University of Lausanne, Lausanne, Switzerland

Body mass index (BMI) has been used to define overweight/obesity and characterize their associated risks. However, interest in classifying subject health status according to adiposity is increasing. Percentage body fat (%BF) should be a better indicator of excess body fat, whereas waist circumference (WC) a better predictor of disease, than BMI. Beyond known differences in body composition between Caucasians (CA) and Asians, little is known about Africans. We contrasted the relationships between %BF and BMI or WC in North-Africans (NA), West-Africans (WA) and CA. %BF, estimated by bioelectrical impedance, was modelled as a function of BMI and BMI<sup>2</sup> or WC and WC<sup>2</sup>.

	Men (M)		Women (W)	
	NA (n=135)	WA (n=469)	NA (n=92)	WA (n=1576)
BMI (kg/m <sup>2</sup> )	%BF predicted from BMI or WC values			
18.5	8.6	11.1	23.2	26.6
25.0	18.5	21.7	33.3	37.5
30.0	25.7	29.8	40.5	44.9
WC (cm)M/W				
90/80	17.9	24.4	32.9	38.9
95/85	20.2	28.0	35.4	42.1
100/90	22.5	31.9	37.9	45.1
105/95	24.8	35.8	40.6	48.0

The derived %BF values from standard BMI cut-off points or WC values were higher among WA than NA (P<0.0001), and the difference increased with WC values. Moreover, when compared with a group of 141 CA men, NA men showed similar %BF values derived from IMC<30 and WC>100 cm (data not shown). These results suggest ethnic variations in the relative total adiposity as well as the distribution of body fat. Particularly, universal BMI or WC cut-off points, established in CA, are likely not appropriate for comparison of obesity prevalence or risk assessments in WA.

Gartner Agnès, Traissac Pierre, Méjean Caroline, Savy Mathilde, Landais Edwige, Dioum A., Delpeuch Francis, Maire Bernard, SchutzY. (2008)

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