COMPARATIVE ANTHROPOMETRIC DATA AND DENSITOMETRY IN YOUNG FEMALES FROM INDIA, NIGERIA AND UKRAINE

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Objectives: To establish the average bone mineral density (BMD) and bone mineral content (BMC) and compare the body composition in young females of the different ethno-geographical groups.

Materials and methods: The routine anthropometric procedure (body height and weight, mid-arm and mid-calf circumferences, shoulder and thorax width, triceps, biceps, suprailiac and calf skinfolds measurements, measurements of the calcaneal bone mineral density (BMD, g/cm2) and bone mineral content (BMC, g), estimated on ALOKA-5.0 DXA machine among Ukrainian (n=80), Indian (n=58) and Nigerian (n=72) female students (18-21 years) were done. Total body fat percentage and total body muscular mass were calculated according to the measurements to the skinfolds, using Womersley J. and Kuczmarski R.J equations (1974-2000).

Results: Obtained data reveals that Indians have the less body weight, but greater total body fat (12.00% while Nigerians have 11.19%). This parameter strongly correlates (rx/y 0.74-0.81) with the bicipital skinfold and BMD. Indians have the lowest BMD and BMC among compared groups: BMD 0.94±0.02, BMC 67.09±1.96, which are significantly (10.35% for the BMD and 13.40% for the BMC, $p < 0.001$) lower, than in Ukrainians and Nigerians. BMD and BMC in Indians were significantly ($p < 0.001$) more than in Nigerians (BMD 0.98±0.02, BMC 77.31±2.16 in Indians; 0.75±0.06 and 53.88±4.94 – in Nigerians). Anthropometric data reveals the highest body parameters of the weight (74.58±1.95 kg), height (173.58±0.92 cm), shoulder and thorax width and lean muscular body mass (52.12±1.58 kg). Ukrainians show the lowest weight (55.53±0.69 kg), height (166.06±0.57cm), thorax width, moderate muscular mass (46.08±1.5) and highest thickness of the skinfolds and body fat (16.54±0.52%). Total muscular body mass in Nigerians was more in Indians by 3.49 kg, and by 1.57 kg more than in Ukrainians. Muscular mass in Nigerians strongly positively correlates (rx/y 0.67-0.71) with the BMD and BMC and negatively (rx/y -0.56) correlates with the body fat and skinfolds' thickness. Ukrainians and Nigerians have the mostly similar BMD and BMC: BMD 1.05±0.04 in Ukrainians, 1.05±0.02 in Nigerians; BMC 77.40±4.49 in Ukrainians, 77.32±2.21 in Nigerians. Indians expose moderate weight (63.89±1.25 kg), height (169.16±1.05 cm), fat percentage; thorax width was the same as that in Nigerians and Ukrainians, but the muscular mass was lowest (45.78±3.30 kg) among participants.

Conclusions: BMD, BMC and anthropometric parameters have the obvious ethno-geographical determinant. Muscular body mass and fat percentage determines the BMD and BMC dependently with the racial features of the body composition.

Актуальні питання теоретичної та клінічної медицини : збірник тез доповідей Міжнародної науково-практичної конференції студентів та молодих вчених, м. Суми, 10-12 квітня 2013 р. / Відп. за вип. М.В. Погорєлов. — Суми : СумДУ, 2013. — Р. 4.