

COMPARATIVE BONE DENSITOMETRY AND ANTHROPOMETRY OF THE INDIAN AND NIGERIAN STUDENTS

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Introduction. Ethnoterritorial differences in anthropometric parameters still not define because the phenotypes in modern populations undergone the significant changes. Aim of the study: to find out is there any correlations between the body composition and bone mineral mass in young female of the different ethnoterritorial groups.

Material and methods. The routine anthropometric procedure (weight, mid-arm and mid-calf circumferences, 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 Indian (n=58) and Nigerian (n=72) female students (18-21 years) were done. Total body fat percentage was calculated by the Durnin J., Womersley J. equation (1974), total body muscular mass by the Kuczmarski R.J, Flegal K.M. equation (2000). Correlation analysis was done between the obtained data.

Results. The Indian one have more proportional bodies due to the presence of the significant correlations between the lengths of their extremities (length of the forearm-to the length of the hand $r_{x/y}$ 0.68, length of the hand- to the total upper limb length $r_{x/y}$ 0.88, length of the foot – to the total lower limb length $r_{x/y}$ 0.63). In Nigerian females certain disproportions between the length and width of the extremities were found (width dominates at the upper limbs, length – at the lower limbs). Indian students were shorter (in average) than the Nigerians up to the 7.58 cm. In Indians the less body weight, but greater total body fat (12.00% while the Nigerians have 11.19%) which strongly correlates ($r_{x/y}$ 0.74-0.81) with the bicipital skinfold and BMD. Nigerians expose more muscular Total muscular body mass in Nigerians is more than in Indians up to the 3.49 kg. This parameter in Nigerians strongly positively correlates ($r_{x/y}$ 0.67-0.71) with the BMD and BMC and negatively ($r_{x/y}$ -0.56) correlates with the body fat and skinfolds' thickness. In average Indian female accumulate body fat at the upper body (triceps skin folds thicker than in Nigerians in 0.26 cm. In Nigerians more subcutaneous fat occurs on the calf, where the skinfolds thicker than in Indians up to the 0.5 cm. 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).

Conclusions. Total muscular body mass in Nigerians is more than in Indians. Muscular body mass and fat percentage determines the BMD and BMC dependently with the racial features of the body composition. In average Indian female accumulate body fat at the upper body. In Nigerians more subcutaneous fat occurs on the calf.

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PORÓWNAWCZA ANTROPOMETRIA I DENSYTOMETRIA KOSTNA INDYJSKICH I NIGERYJSKICH STUDENTÓW

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