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Relationship of Vitamin D Status with Muscle Mass and Muscle Strength in Young Indian Adults – Evidence from Andhra Pradesh Children and Parents Study Cohort

Bharati Kulkarni[1*], Hannah Kuper[2], Sanjay Kinra[2], M Sesha Charyulu[1], Yoav Ben-Shlomo[3], George Davey Smith[3], Shah Ebrahim[2] and K.V. Radhakrishna[1]

[1]National Institute of Nutrition, Hyderabad, India.
[2]London School of Hygiene and Tropical Medicine, London, UK.
[3]University of Bristol, Bristol, UK.

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Special Editors:
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ABSTRACT

Objectives: Positive relationship of vitamin D status with muscle mass and strength has been observed in studies from the developed countries but evidence from the developing countries is sparse. This study assessed the relationship of vitamin D status with muscle mass and muscle strength in rural young adults from Hyderabad, India.
Methods: The study participants (n=956; age 18-20 years; 42% women) were a part of Andhra Pradesh Children and Parents Study cohort which was established to assess the long term impact of early nutrition supplementation provided through a government programme. Their serum 25-hydroxyvitamin D was assessed using HPLC, appendicular skeletal muscle mass (ASM) was assessed using dual energy X-ray absorptiometry and grip strength was assessed using grip dynamometer.
Results: The participants were lean with average body mass index of 19.5 kg/m^2. Prevalence of vitamin D deficiency (serum 25(OH) vitamin D3 < 20 ng/ml) was 33.6% in men and 51.4% in women. Vitamin D deficiency was associated with lower ASM (β (95% CI): - 0.38 (-0.72 to -0.05)

Correspondence: Lucie Bohac, Coordinator, Micronutrient Forum Secretariat (email: lbohac@micronutrient.org)
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kg; p = 0.02) with a trend of lower muscle strength in unadjusted analyses. After adjustment for relevant confounders, the relationship of vitamin D deficiency with lower ASM (β (95% CI): -0.21 (-0.37 to - 0.05) kg; p =0.01) persisted but not with lower grip strength.
Conclusions: Prevalence of vitamin D deficiency was high in these rural young adults. Vitamin D deficiency was associated with lower muscle mass but not with lower muscle strength in this cohort. Alleviation of vitamin D deficiency may improve muscle mass.

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