

Vitamin D Supplementation: Do Indian Children Need Higher Dose?

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The recent Indian Academy of Pediatrics (IAP) guidelines recommended daily vitamin D supplementation in doses of 400 IU upto one year of age, and 600 IU from 1-18 years of age [1]. There were however concerns about the adequacy of such daily doses in the context of Indians' ability to maintain vitamin D sufficiency due to several reasons [2]. Lack of sufficient Indian data on the correct dose and the need for studies with graded supplementation doses of vitamin D was emphasised [2].

The recent article by Marwaha, *et al.* [3], therefore, made for an interesting read. The authors compared the efficacy of daily vitamin D doses of 600 IU, 1000 IU, and 2000 IU to maintain vitamin D status in 216 healthy vitamin D deficient pre-pubertal girls belonging to upper socio-economic status (SES). After 6 months of supplementation, vitamin D levels of >20 ng/mL were achieved in 91%, 97%, and 100% girls, and there was dose dependent increase in vitamin D levels (+14.9, +18 and +22.2 ng/mL) in three groups, respectively. Also, the mean serum vitamin D concentrations remained in the insufficient range (21-30 ng/mL according to Endocrine Society guidelines, 2011) in the groups that received 600 or 1000 IU and barely reached sufficiency (>30 ng/mL) in those receiving 2000 IU/day even after 6 months. Another important documentation of the study was that the daily dose of 2000 IU did not result in vitamin D concentrations reaching toxicity range in any child. These data are similar to previous Indian studies using higher supplementation doses of vitamin D and makes a strong pitch for revisiting the IAP's guidelines in future or at least for conducting further larger studies in Indian children [3,4]. The question whether routine vitamin D supplementation in healthy prepubertal girls has long-term skeletal benefits, as pointed out in the accompanying editorial, can only be addressed by long-term studies [5].

We also noted minor discrepancies in data presentation. ANOVA was used to study the difference in means in 3 groups, assuming normal distribution of data. But in Table II, of the article [3], results are shown in median (IQR) whereas in abstract, results section and Table I, the results are mentioned in mean (SD). The participants were only girls aged 6-12 years from upper SES mainly during winter months. Hence, the results may not be applicable to children of both sexes, in all age groups, lower SES, and throughout the year.

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AUTHOR'S REPLY

We thank the authors for their interest in our study, and appreciate this opportunity to reply to their comments. In our study of pre-pubertal girls, we found that a daily dose of 1000 vitamin D3 achieved and maintained vitamin D sufficiency in 97% of girls [1]. In Table I, we mentioned mean and standard deviation values of baseline hormonal and biochemical parameters. Table II showed changes in hormonal and biochemical parameters after vitamin D3 supplementation. All *P* values were based on non-parametric one-way analysis of variance (DUNN test). We used non-parametric DUNN test in view of large standard deviations in the values. We agree with the limitation of study that the results may not be applicable to children of both sexes, in all age groups, lower socioeconomic strata, and throughout the year. Further studies with larger sample size and longer follow-up are required to confirm our findings and to evaluate the long-term benefit of the vitamin D supplementation.

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