

Vitamin D status and its association with parathyroid hormone concentrations in women of child-bearing age living in Jakarta and Kuala Lumpur

Abstract

Objective:To describe the vitamin D status of women living in two Asian cities, – Jakarta (6°S) and Kuala-Lumpur (2°N), to examine the association between plasma 25-hydroxyvitamin D and parathyroid hormone (PTH) concentrations, and to determine a threshold for plasma 25-hydroxyvitamin D above which there is no further suppression of PTH. Also, to determine whether dietary calcium intake influences the relationship between PTH and 25-hydroxyvitamin D.
Design:Cross-sectional.
Setting:Jakarta, Indonesia and Kuala Lumpur, Malaysia.
Participants:A convenience sample of 504 non-pregnant women 18–40 years.
Main measures:Plasma 25-hydroxyvitamin D and PTH.
Results:The mean 25-hydroxyvitamin D concentration was 48 nmol/l. Less than 1% of women had a 25-hydroxyvitamin D concentration indicative of vitamin D deficiency (<17.5 nmol/l); whereas, over 60% of women had a 25-hydroxyvitamin D concentration indicative of insufficiency (<50 nmol/l). We estimate that 52 nmol/l was the threshold concentration for plasma 25-hydroxyvitamin D above which no further suppression of PTH occurred. Below and above this concentration the slopes of the regression lines were -0.18 (different from 0; $P=0.003$) and -0.01 ($P=0.775$), respectively. The relation between vitamin D status and parathyroid hormone concentration did not differ between women with low, medium or high calcium intakes ($P=0.611$); however, even in the highest tertile of calcium intake, mean calcium intake was only 657 mg/d.
Conclusion:On the basis of maximal suppression of PTH we estimate an optimal 25-hydroxyvitamin D concentration of ~ 50 nmol/l. Many women had a 25-hydroxyvitamin D below this concentration and may benefit from improved vitamin D status.

Keyword: Vitamin D; Parathyroid hormone; Women; Survey; Jakarta; Kuala Lumpur.