



Asian Journal of Epidemiology

ISSN 1992-1462

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Research Article

Vitamin D Status and its Impact on Body Composition in Elderly Community-dwelling Individuals in Bandung and Sumedang, West Java Province, Indonesia

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Abstract

Background and Objective: Vitamin D status is correlated with musculoskeletal function. Yet, normal cut-off values for vitamin D status vary across studies and remain a subject of debate. This study design to find out a cut-off value of vitamin D in community-dwelling elderly individuals in Indonesia, examine vitamin D status based of the new cut-off value and vitamin D associations with various body characteristics that associate with musculoskeletal function. **Materials and Methods:** A cross-sectional study consisted of 263 community-dwelling elderly individuals in Bandung and Sumedang, West Java province, Indonesia were enrolled between July and December, 2015. Vitamin D status was calculated using adjusted vitamin D cut-off value that determined based on parathyroid hormone suppression through receiver operating characteristic analysis. Correlation analysis then used to found out vitamin D association with muscle mass, muscle strength and body fat. **Results:** Most subjects (94.3%) were vitamin D insufficient-deficient based on the adjusted cut-off value ($\leq 36.0 \text{ ng mL}^{-1}$). Vitamin D status was correlated with muscle mass ($r = 0.239$, $p = 0.000$), muscle strength ($r = 0.324$, $p = 0.000$) and also negatively correlated with percentage of body fat ($r = -0.261$, $p = 0.000$) significantly. **Conclusion:** Hypovitaminosis D is a common condition in community-dwellings elderly individuals in Indonesia. Its association with muscle mass, muscle strength and body fat, highlight the need for comprehensive recommendations, such as education for adequate nutrition intake, sun exposure, physical activity and consideration of vitamin supplementation in rational way should be considered and designed.

Key words: Aging, cut-off value, body fat, community-dwelling, elderly, muscle mass, muscle strength, vitamin D deficiency

Received: February 11, 2017

Accepted: March 10, 2017

Published: March 15, 2017

Citation: Vitriana Biben, Irma Ruslina Defi, Gaga Irawan Nugraha and Budi Setiabudiawan, 2017. Vitamin D status and its impact on body composition in elderly community-dwelling individuals in Bandung and Sumedang, West Java province, Indonesia. *Asian J. Epidemiol.*, 10: 63-69.

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.