



Response to the Editor



Thank you for your letter to our publication in Osteoporosis and Sarcopenia entitled on “Recent nutritional trend of calcium and vitamin D in East Asia”. Although the increase in calcium nutrition from food in postmenopausal women is urgent issue, Dr Yoo Kyoung Park pointed out that our claim is still premature to apply to whole population. As Dr Y-K Park pointed out that the KNHANES study had been limited the age (≥ 50 years of age) of the participants and the findings about calcium insufficiency should not be expanded into entire population [1].

On the other hand, the National Nutrition Survey in Japan [2] was subjected community dwelling household ($n = 3507$) including the people aged over 1 year. Therefore, the participants of this research consisted of entire generation of Japan. The report of the National Nutritional Survey in Japan indicated that the calcium intake in younger generation (420–454 mg/day for age 20–40 years old) was less than postmenopausal women (568–546 mg/day for sixties and seventies). In addition, total caloric intake of younger generation (1706 and 1652 kcal/day for twenties and forties, respectively) and the postmenopausal women (1766 and 1639 kcal/day for sixties and seventies, respectively) were almost same level suggesting that the calcium density in foods (Calcium in mg/day/Caloric intake in k Cal) was around 30% less in the younger generation (0.25–0.27 mg/kcal) than those in the older generation (0.32–0.33 mg/kcal). As it was written in our article, the calcium intake in older generation was still far less from the calcium requirement (788 mg/day for old women or 0.48 mg/kcal) [3]. Therefore, the postmenopausal women, who had relatively high calcium intake, took calcium around 70% of requirement. Although there was no available data regarding the effect of calcium intake on the development of peak bone mass in a prospective study design in Asian population, the low calcium intake seen in a younger generation in Japan strongly suggested that the development of proper peak bone mass may not be achieved by the recent young generation in Japan. Bone health has been reported to improve in Vietnamese postmenopausal women, who were received nutritional education [4]. Therefore, re-education regarding calcium intake will be required for the younger population. On the other hand, since the older generation in Japan had been adapted to the traditional dietary custom, it may be difficult to increase in calcium intake from the foods, further. Thus, we propose to take calcium supplement for the older generation.

Since bone mineralization abnormalities in VDR knock out mice was recovered by increasing calcium and phosphate intakes [5], intestinal calcium absorption is an essential factor to promote bone calcification rather than vitamin D. Thus, the insufficient intake of calcium seen in recent Japan may be critical in not only postmenopausal women but also in the younger generation, and that is why we emphasized our concern for all Japanese generation.

The intestinal calcium absorption is higher in the people with habitually low calcium intake through active transport system by calcitriol especially in younger generation [6]. On the other hand, the intestinal adaptation for low calcium intake may not properly active in elderly people because of low production of 1,25(OH)₂D in kidney [7]. Therefore, passive transport of calcium, which is facilitated by high calcium intake, may have a meaningful role on the bone metabolism in the older people. In addition to high calcium intake, vitamin D nutrition also plays an important role on bone health. As Dr. Yoo Kyoung Park pointed out properly, we could not present vitamin D nutritional status in our National Nutritional survey, because the research did not measure serum level of 25(OH)D in the participants. However, the survey was reported the vitamin D intake from food in the participants. The mean intake of vitamin D in the female participants aged over 20 years was reported to be 7.9 $\mu\text{g}/\text{day}$. Then the targeted amount of vitamin D intake for Japanese women has been proposed to be 5.5 $\mu\text{g}/\text{day}$, which is 80–90% of the median value of vitamin D intake from foods in Japanese adult female [1]. In contrast to the KNHANES study, this value of vitamin D intake did not base on the concrete evidence of vitamin D nutrition and we expect that the target value of vitamin D intake is far less value to keep proper vitamin D nutrition. Recently, the assay system for 25(OH)D has been approved in clinical settings to diagnose vitamin D deficiency in Japan. So, the evidences for the proper vitamin D nutrition will be accumulated in near future. After that we can conclude how much vitamin D intake should be recommended.

The recent progress in calcium and vitamin D nutrition research has represented the importance of these nutrients for not only bone but also for entire organ health. In this sense, the recent nutritional status of calcium intake in Japan could not be passed over.

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Conflict of interest

The authors declare no conflict of interest related to the document of the article.

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