



# Journal of Nutrition and Food Security

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School of Public Health  
Department of Nutrition  
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eISSN: 2476-7425

pISSN: 2476-7417

JNFS 2017; 2(2): 135-137

Website: jnfs.ssu.ac.ir

## Vitamin D Deficiency: A Neglected Truth in Iran

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### ARTICLE INFO

#### EDITORIAL ARTICLE

#### Article history:

Received: 17 Nov 2016

Revised: 21 Dec 2016

Accepted: 21 Jan 2017

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Vitamin D (vit D) is a fat-soluble steroid which includes two forms: vit D2 (ergocalciferol) and vit D3 (cholecalciferol). The former is provided from plant and the latter is taken from animal sources (Shao *et al.*, 2012). Vit D is obtained from natural synthesis in the skin and also from some dietary sources such as oily fish, eggs, fortified products (dairy, cereals, soy), and oral supplements (Jolfaie *et al.*, 2016, Kennel *et al.*, 2010). Finally, it is activated biologically during hydroxylation process in the liver and kidneys (Shao *et al.*, 2012).

Vit D has essential physiological functions for maintaining mineral homeostasis (Chung *et al.*, 2011). Indeed, vit D deficiency can contribute to several musculoskeletal disorders, such as rickets in children, osteomalacia, osteopenia, osteoporosis, and fractures in adults (Moher *et al.*, 2001). In addition, the association between vit D deficiency and many diseases including cancers, infections,

autoimmune diseases, diabetes mellitus, and cardiovascular diseases have been studied (Hilger *et al.*, 2014, Norman, 2008). The normal level of 25(OH)D (the dominant vit D metabolite in circulation representing vit D status) is considered 20 ng/ml (50 nmol/L) and less than this value is classified into the deficiency category (Christodoulou *et al.*, 2013, DeLuca, 2004). The most important factors in deficiency of vit D are decreased sun exposure, insufficient vit D intake, and increase of age (Gaugris *et al.*, 2005). Moreover, high risk of vit D deficiency has been observed in special groups and conditions such as children, pregnant and postmenopausal women, as well as elderly people (Shao *et al.*, 2012); diseases associated with fat mal-absorption (e.g., Crohn's disease) (Kennel *et al.*, 2010); and disturbing conditions of parathyroid, liver, or kidney functions (Kathleen Mahan *et al.*, 2012).

**This paper should be cited as:** Ramezani-Jolfaie N, Salehi-Abargouei A. *Vitamin D Deficiency: A Neglected Truth in Iran. Journal of Nutrition and Food Security (JNFS)*, 2017; 2 (2): 135-137.

On the basis of current reports, there are approximately one billion people with vit D deficiency worldwide (Khadilkar and Khadilkar, 2013). In Iran, despite the fact that it is a sunny country, the high prevalence of vit D deficiency is a growing concern (Heshmat *et al.*, 2008). According to a population-based study in our country, the rate of vit D deficiency among women and men has been estimated to be about 75.1 % and 72.1%, respectively (Moradzadeh *et al.*, 2008). Furthermore, Yazd as a province in center of Iran is located in desert areas (in the latitude of 31.5<sup>0</sup>) and is thus mostly sunny in the year, has prevalent vit D deficiency. Some studies have indicated that 60% of girl students and 78 % of medical staffs of Shahid Sadughi hospital had deficiency (Mehrdad *et al.*, 2009, Shakiba and Rafiei, 2009). As mentioned earlier, several studies indicated the association between vit D status and chronic diseases; however, in Iran the studies did not replicate these results. This might be cause by the fact that all participants had vit D deficiency and there was low variation between them in serum vit D levels. Frequent use of topical sunscreen by women and lack of vit D fortified foods might be some other reasons for high prevalence of vit D deficiency in Iran despite its sunny climate (Heshmat *et al.*, 2008).

Some recommendations have been suggested that can help to overcome this situation. Measurement of serum 25(OH)D levels regularly to identify the necessity of vit D supplementation. Daily sunscreen-free exposure to the sun (10-15 minutes) to provide vit D. Consumption of foods that naturally contain vit D (salmon, sardines mackerel, and cod liver oil). Consumption of fortified foods with vit D3 (e.g., fortified milk, orange juice, formulas, yogurts [100 IU/8 oz],

cheeses [100 IU/3 oz], butter [56 IU/3.5 oz], margarine [429 IU/3.5 oz], and breakfast cereals [100 IU/serving]). Using vit D supplementation to treat vit D deficiency and maintenance therapy. In vit D supplementation mentioned above, the recommended supplementation doses were as the following: infants aged 0–1 year [2000 IU/d, 400-1000 IU/d], children aged 1–18 years [2000 IU/d, 600-1000 IU/d], adults [50,000 IU/week for 8 weeks, 1500–2000 IU/d]) (Holick *et al.*, 2011). Moreover, the results of meta-analysis studies indicated that 700-800 IU/d vit D supplementation can reduce the risk of fractures and bone loss in elderly people (Bischoff-Ferrari *et al.*, 2005, Tang *et al.*, 2007). The results of another meta-analysis also revealed that serum vit D levels are inversely associated with all-cause and cause-specific mortality which impose significant economic burden on the healthcare system (Chowdhury *et al.*, 2014, Schöttker *et al.*, 2014). According to findings of the study conducted on Canadian population, the economic burden could be decreased to 7.3% (4.0-10.5%) or \$14.4 billion (\$8.0–\$20.1 billion) if the mean serum vit D concentration increases to 105 nmol/L (Grant *et al.*, 2010). Therefore, regarding the importance of vit D effects on body health and subsequently health care system, it is necessary to pay special attention to vit D status in all age groups.

### Authors' Contributions

Ramezani-Jolfaie N wrote the manuscript. Salehi-Abargouei A edited the manuscript. Both authors approved the content of the manuscript, and agreed for all aspects of the work.

### References

**Bischoff-Ferrari HA, et al.** 2005. Fracture prevention with vitamin D supplementation: a meta-analysis of randomized controlled trials. *Journal of the American medical association.* **293** (18): 2257-2264.

**Chowdhury R, et al.** 2014. Vitamin D and risk of cause specific death: systematic review and meta-analysis of observational cohort and randomised intervention studies. *British medical journal* **348**: g1903.

- Christodoulou S, Goula T, Ververidis A & Drosos G** 2013. Vitamin D and bone disease. *BioMed research international*. **2013**: 396541.
- Chung M, Lee J, Terasawa T, Lau J & Trikalinos TA** 2011. Vitamin D with or without calcium supplementation for prevention of cancer and fractures: an updated meta-analysis for the US Preventive Services Task Force. *Annals of internal medicine*. **155 (12)**: 827-838.
- DeLuca HF** 2004. Overview of general physiologic features and functions of vitamin D. *The American journal of clinical nutrition*. **80 (6)**: 1689S-1696S.
- Gaugris S, et al.** 2005. Vitamin D inadequacy among post-menopausal women: a systematic review. *Monthly journal of the association of physicians*. **98 (9)**: 667-676.
- Grant WB, Schwalfenberg GK, Genuis SJ & Whiting SJ** 2010. An estimate of the economic burden and premature deaths due to vitamin D deficiency in Canada. *Molecular nutrition & food research*. **54 (8)**: 1172-1181.
- Heshmat R, et al.** 2008. Vitamin D deficiency in Iran: A multi-center study among different urban areas. *Iran journal public health*. **37 (suppl)**.
- Hilger J, et al.** 2014. A systematic review of vitamin D status in populations worldwide. *British journal of nutrition*. **111 (01)**: 23-45.
- Holick MF, et al.** 2011. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society clinical practice guideline. *The Journal of clinical endocrinology & metabolism*. **96 (7)**: 1911-1930.
- Jolfaie NR, Rouhani MH, Onvani S & Azadbakht L** 2016. The association between Vitamin D and health outcomes in women: A review on the related evidence. *Journal of research in medical sciences: The official journal of Isfahan University of medical sciences*. **21**: 76.
- Kathleen Mahan L, Escott-Stump S, Raymond Janice L & Krause MV** 2012. *Krause's Food & the Nutrition Care Process*. Elsevier health sciences.
- Kennel KA, Drake MT & Hurley DL** 2010. Vitamin D deficiency in adults: when to test and how to treat. In *mayo clinic proceedings*. **85(8)**: 752-758. Elsevier.
- Khadilkar VV & Khadilkar AV** 2013. Use of vitamin D in various disorders. *The Indian journal of pediatrics*. **80 (3)**: 215-218.
- Mehrdad S, Zahra N, Hassan LM & Ahmad S** 2009. Prevalence of vitamin D deficiency among female students in secondary guidance school in Yazd City. *Acta medica Iranica*. **47 (3)**: 209-214.
- Moher D, Schulz KF, Altman D & Group C** 2001. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials. *Journal of the American medical association*. **285 (15)**: 1987-1991.
- Moradzadeh K, et al.** 2008. Normative values of vitamin D among Iranian population: a population based study. *International journal of osteoporosis & metabolic disorders*. **1 (1)**: 8-15.
- Norman AW** 2008. A vitamin D nutritional cornucopia: new insights concerning the serum 25-hydroxyvitamin D status of the US population. *The American journal of clinical nutrition*. **88 (6)**: 1455-1456.
- Schöttker B, et al.** 2014. Vitamin D and mortality: meta-analysis of individual participant data from a large consortium of cohort studies from Europe and the United States. *British medical journal* **348**: g3656.
- Shakiba M & Rafiei P** 2009. Prevalence of vitamin D deficiency among medical staff in Shahid Sadoughi Hospital in Yazd, Iran. *British medical journal*. **7 (25)**: 22-30.
- Shao T, Klein P & Grossbard ML** 2012. Vitamin D and breast cancer. *The oncologist*. **17 (1)**: 36-45.
- Tang BM, Eslick GD, Nowson C, Smith C & Bensoussan A** 2007. Use of calcium or calcium in combination with vitamin D supplementation to prevent fractures and bone loss in people aged 50 years and older: a meta-analysis. *The lancet*. **370 (9588)**: 657-666.

