International Journal of Research in Medical Sciences
Yadav MK et al. Int J Res Med Sci. 2016 Apr;4(4):1307-1308
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20160834

Letter to the Editor

Pros and cons of vitamin D measurements: essential component of quality health care

Sir,

Accuracy in vitamin D measurement is very important because methods used by various laboratories have no uniformities; of course it is choice of individuals but quality in care matters. There are five different types of Vitamin D but D_2 and D_3 are the only types that human can use. Earlier researchers have documented that vitamin D_3 is better absorbed and utilized than D_2.[1] Studies have showed that vitamin D promoting normal blood glycation, immunity, mood swing and other unusual clinical conditions.[2-4] It is observed from many reports that the effectiveness of D_3 provides the most benefit for the human body but there is quite variations in predictive values of different methods.[5]

Adolf Windaus, studied medicine in Berlin, then switched to chemistry, received Nobel Prize for Chemistry in 1928 for his novel discovery on the constitution of the sterols and their connection with vitamins. Afterward various researchers conducted studies on critical & essential use of vitamin D, 90 studies in Europe, 38 in North America, 3 from South America, 36 from Asia Pacific; Middle East & Africa 19 etc showed that more than 50% population is deficient in vitamin D level in blood.[6] Most of the studies concentrate on whether D_2 is better than D_3 for diagnosis & which is better for treatment point of view. Very few core researchers discuss about technology imparted in measurement of vitamin D, (D_2 or D_3).[7]

Biologically vitamin D deficiency or sufficiency should be measured by their circulating level of 25 (OH) D. Variety of methods & techniques are used to measure 25(OH) D. The competitive protein binding assays (CPB, 1970), high performance liquid chromatography (HPLC, mid 1970) and radioimmunoassay (RIA, 1985) for 25(OH)D are the gold standard assays in detecting vitamin D deficiency and sufficiency. However, due to their demerits these assays are fraught with technical difficulties like radioactivity, skill etc. are not routinely used.[7,8]

To avoid radioactivity and shelf-life of radioactive labels these methods superseded in immunoassays new simple assays spectrophotometry, EIA, chemiluminiscent immune assay (CLIA), extended CLIA used to measure vitamin D but these assays have limitations of sensitivity and specificity. All demerits of above assays overcome by tandem mass spectrometry, introduced LC–MS/MS in 2004 for measuring vitamin D metabolites. LC-MS/MS is significantly more sensitive than any other method so use of this methodology is increasing.[9]

Apart from shortfalls in methodologies it was observed that there is huge media coverage of vitamin D and how vitamin D is important in health and the need for supplements were portrayed.[10] Objectives of media may raise issue for betterment of society but framing of quotes like "adequate vitamin D is necessary for good health" downplayed the limitations.

Researcher's surveyed 294 print articles from popular publishing houses from western countries found that supplementation of vitamin were recommended to general healthy population. Many clinical conditions linked to serious health issues without scientific evidence. Media houses overlooked limitations of health sciences and potential risk of over supplementations.[11]

To summarize, biological values of analyte, vitamin D in this case, is of prime concern. Picturizing data from various sources definitely gives directives to concern authority, but authentic data pooled from reliable domain will implicate it significantly. Though high end methods are too expensive but health of individuals is also precise & cannot be compensated. So selection of technology is equally important for better delivery of health care. Role of media & researchers need to be unbiased in delivering correct information.

Meena K. Yadav[1], Ali Netterwala[2], K. S. Yadav[2]*

[1]School of Ayurveda, [2]School of Medicine, D. Y. Patil University, Navi Mumbai 400706 India

***Correspondence to:**
Dr. K. S. Yadav,
E-mail: Ksy_rahul@rediffmail.com

REFERENCES

1. Lehmann U, Hirche F, Stangl GI, Hinz K, Westphal S, Dierkes J. Bioavailability of vitamin D(2) and D(3) in healthy volunteers, a randomized placebo-controlled trial. J Clin Endocrinol Metab. 2013;98 (11):4339-45.
2. Nikooyeh B, Neyestani TR, Farvid M, Alavi-Majd H, Houshiarrad A, Kalayi A, et al. Daily consumption of vitamin D- or Vitamin D + calcium-

fortified yogurt drink improved glycemic control in patients with type 2 diabetes: a randomized clinical trial. American Journal of Clinical Nutrition. 2011;93(4):764-71.
3. Bikle DD. Vitamin D regulation of immune function. Vitamins and Hormones. 2011;86:1-21.
4. Peterson AL, Murchison C, Zabetian C, Leverenz JB, Watson GS, Montine T, et al. Memory, mood, and vitamin d in persons with Parkinson's disease. Journal of Parkinson's disease. 2013;3(4):547-55.
5. Gadre S, Yadav K, Gomes M. Vitamin D status in Indian population: Major Health concern. World Journal of Pharmaceutical Research. 2015;5(1):362-78.
6. Hilger J, Friedel A, Herr R, Rausch T, Roos F, Wahl DA, et al. A systematic review of vitamin D status in populations worldwide. Br J Nutr. 2014;111(1):23-45.
7. Holick MF. Vitamin D status: Measurement, Interpretation and Clinical application. Ann Epidemiol. 2009;19(2):73-8.
8. Jones G. Assay of vitamin D2 and D3 in human plasma by high performance liquid chromatography. Clin Chem. 1978;24:287-98.
9. Saenger AK, Laha TJ, Bremner DE, Sadrzadeh SMH. Quantification of serum 25-hydroxyvitamin D2 and D3 using HPLC–tandem mass spectrometry and examination of reference intervals for diagnosis of vitamin D deficiency. Am J Clin Pathol. 2006;125:914-20.
10. Caulfield T, Clark MI, McCormack JP, Rachul C, Field CJ. Representations of the health value of vitamin D supplementation in newspapers: media content analysis. BMJ Open. 2014;4:e006395.
11. Koul PA, Ahmad SH, Ahmad F, Jan RA, Shah SU, Khan UH. Vitamin D Toxicity in Adults: a case series from an area with endemic hypovitaminosis D. Oman Med J. 2011;26(3):201-4.

Cite this article as: Yadav MK, Netterwala A, Yadav KS. Pros and cons of vitamin D measurements: essential component of quality health care. Int J Res Med Sci 2016;4:1307-8.