

## Knowledge of doctors working in Karachi about Vitamin D deficiency

Waqas Ahmed Burney<sup>1</sup>, Hafiz Abdul Moiz Fakh<sup>2</sup>,  
Razia Iftikhar<sup>3</sup>, Misbah Fakh<sup>4</sup>, Asma Urooj<sup>5</sup>

### ABSTRACT

**Objectives:** To assess the knowledge of doctors working in Karachi about Vitamin D deficiency.

**Methodology:** This descriptive cross-sectional study was carried out at public and private hospitals and clinics in Karachi from January 2010 to March 2010. Four hundred doctors registered with the Pakistan Medical and Dental Council (PMDC) working in Karachi were included in the study. A well structured, pre-tested questionnaire was designed to gather data. Each interview was completed by an investigator. Questions included the sources and metabolism of vitamin D, deficiency of vitamin D, its presentation in clinics and its management.

**Results:** Questionnaires were completed by 400 doctors. The results indicate that doctors are aware of the sources and metabolism of vitamin D but lack information about the duration and factors regarding sunlight exposure. The physicians generally have good information about the signs and symptoms of vitamin D deficiency and the factors causing it, but do not have sound information about deficiency management.

**Conclusion:** The results support the fact that doctors need more knowledge and training about vitamin D deficiency.

**KEY WORDS:** Dihydroxyvitamin D, Hypocalcemia, Hypovitaminosis D, Osteomalacia, Osteoporosis.

Pak J Med Sci April - June 2011 Vol. 27 No. 2 357-360

### How to cite this article:

Burney WA, Fakh HAM, Iftikhar R, Fakh M, Urooj A. Knowledge of doctors working in Karachi about Vitamin D deficiency. Pak J Med Sci 2011;27(2):357-360

### INTRODUCTION

Vitamin D deficiency leads to hypocalcaemia, severe hyperparathyroidism and increased bone

turnover. This may be associated with osteoporosis and fractures. In prolonged and severe cases, osteomalacia and rickets may occur, resulting in bone pains, myopathy and waddling gait.<sup>1</sup> There is a world-wide problem of vitamin D inadequacy and deficiency that is largely being unheeded and under-treated.<sup>2</sup> This problem is not isolated, but affects developed as well as developing countries, subtropical and temperate regions, and populations of all ages. Vitamin D inadequacy and deficiency may pose a bigger threat in Asian countries, as the assessment of vitamin D status and vitamin D education are largely overlooked, perhaps on the assumption that vitamin D insufficiency is unlikely to occur in regions with plentiful sunshine.<sup>3</sup>

There are reports that physicians generally have little training in nutrition and a poor knowledge of the subject. Few studies have been carried out to assess the knowledge about micronutrients particularly vitamin D and they have indicated the lack of knowl-

1. Waqas Ahmed Burney, MBBS,
2. Hafiz Abdul Moiz Fakh, MBBS,
3. Razia Iftikhar, FCPS,  
Professor of Obstetrics and Gynecology,
4. Misbah Fakh,  
Final Year, Dow Medical College,  
Dow University of Health Sciences, Karachi,
5. Asma Urooj, MBBS,  
1,2,5: House Officer, Medical Unit 5, Civil Hospital Karachi,  
Dow University of Health Sciences, Karachi, Pakistan.

Correspondence:

Waqas Ahmed Burney,  
Address: F-6 Doulat Square, Block 13-B,  
Gulshan-e-Iqbal, Karachi 75300, Pakistan.  
E-mail: waqas\_burney@hotmail.com  
rrg786@yahoo.co.in

- \* Received for Publication: October 26, 2010
- \* Revision Received: October 28, 2010
- \* Revision Accepted: February 26, 2011

edge of doctors about the general and clinical aspects of vitamin D.<sup>4</sup> To the best of our knowledge, no such study has been carried out in this region.

Thus the rationale of the study was to assess the knowledge of practicing physicians about vitamin D deficiency.

### METHODOLOGY

This descriptive cross-sectional study was conducted at public and private hospitals and clinics in Karachi from January 2010 to March 2010. Approval to conduct this study was obtained from the institutional review board of Dow University of Health Sciences, Karachi.

Four hundred doctors registered with the Pakistan Medical and Dental Council (PMDC) working in Karachi were included in the study. A verbal consent was obtained from each participating doctor. A pre-tested, structured questionnaire, containing 11 open and closed ended questions, along with the professional designation was used to gather data. The questionnaires were filled by an investigator through face-to-face interview with the doctors. This was done to make sure that the questionnaires were not incomplete in any sense of the way.

Areas tested in the questionnaire included sources and metabolism of vitamin D, risk factors associated with excess and deficiency of this vitamin, along with the clinical aspects of hypovitaminosis D, its presentation in the clinics and its management. Doctors were also asked about their daily sunlight exposure and use of any multivitamin.

Data was analysed using SPSS version 15.0. Frequencies and standard deviations were determined where appropriate.

### RESULTS

Questionnaires were completed by 400 doctors. These included residents, general practitioners and consultants from all fields of medicine and surgery. The questions asked are shown in a simplified form in the Table-I together with the correct answer.

The survey showed that 62% correctly identified the sources of vitamin D and knew that it is found only in animal food sources and was not present in fruits and vegetables. Majority (85%) knew that the metabolically active form of the vitamin is 1,25 Dihydroxy vitamin D. 73% did not know the favorable conditions for sunlight absorption and only 45% knew that the necessary sunlight exposure for vitamin D synthesis is two hours.

About 66% of the respondents correctly pointed out the fact that the signs and symptoms of vitamin D deficiency are not just limited to muscle pain and weakness but may include other features. Whereas 82% correctly identified the risk factors for vitamin D deficiency and 83% knew that diseases of more than one system such as the kidney, liver, gut etc leads to the deficiency state. Only 35% agreed that the first step after a good history and examination on a suspected case of vitamin D deficiency would be to confirm the diagnosis by doing serum vitamin D and calcium levels. Nearly half (52%) of the doctors responded that for a non-affording patient with suspected vitamin D deficiency, they would give parenteral vitamin D and 66% correctly identified that vitamin D is administered intramuscularly in the gluteal region.

Of those surveyed, 63% did not know that there are systems other than the bone and muscle that require vitamin D such as the immune system and in cancer

Table I: Questions Asked, Correct Answers and Percentage of Doctors with Correct Answer.

No* Questions+	Correct answer	% Correct
1 Major dietary sources of vit D++	Fish liver oil, egg yolk, meat, milk	62
2 Active form of vit D	1,25 (OH) <sup>2</sup> vit D	85
3 Favorable conditions for sunlight absorption++	Thin skin, fair skin, 10:00am-2:00pm sunlight	27
4 Duration of sunlight exposure necessary	2 hours	45
5 Signs/symptoms of vit D deficiency++	Tiredness, nausea & vomiting, soft skull & leg bones in children, muscle pain & weakness, curved leg.	66
6 Risk factors for deficiency++	Indoor lifestyle, vegetarian, obesity, genetics.	82
7 Diseases of systems leading to deficiency++	GIT, liver, bone, skin, kidneys	83
8 First step in management of deficiency	Confirm diagnosis by serum Ca <sup>+2</sup> and vit D levels	35
9 Treatment of deficiency in non-affording	Give parenteral vit D	52
10 Mode of administration of parenteral vit D	Intramuscularly	66
11 Vit D is important for++	Bone, muscle, immune system, anticancer effects, skin	87

\*Answers arranged in order as in the questionnaire.

+Questions are given here in an abbreviated form. ++Questions with more than one correct option. If only all the right options were selected, then the reply was taken as correct. All others were taken as incorrect.

prevention. All the doctors echoed the thought that vitamin D should be identified as a very important topic for Continued Medical Education (CME) Programmes and the knowledge of this vitamin D should be refreshed at frequent and regular intervals.

## DISCUSSION

In this descriptive cross-sectional study carried out in Karachi, we assessed the level of knowledge in doctors regarding vitamin D deficiency. Our study showed that although the level of knowledge was good but information about the management aspects was seriously lacking.

Vitamin D plays a central role in bone metabolism and maintaining bone health, and is important for muscle functioning.<sup>5,6</sup> The long-term effects of vitamin inadequacy on calcium homeostasis have been associated with the development of chronic bone disorders, such as osteoporosis.<sup>7,8</sup> In Pakistan, vitamin D deficiency has been found to be rampant. Siddiqui and Rai found that in Northern Pakistan where sunlight was available in abundance, rickets was a common problem in infants and children.<sup>9</sup> They attributed the hypovitaminosis D to malnutrition, lack of awareness and antenatal factors. Atiq et al investigated hypovitaminosis D in healthy breast-fed children and nursing mothers at a major teaching hospital in Karachi, Pakistan, and found that 55% of infants and 45% of mothers had very low serum 25(OH)D levels (<25 nmol/l or 10 ng/ml).<sup>10</sup>

There is a serious gap in the nutrition knowledge of every physician.<sup>11</sup> In particular, many physicians do not have the expertise to properly advise their patients on important aspects of the role of nutrition in the causation, prevention and therapy of disease.<sup>12,13</sup> This clearly reflects the low priority given to the subject in medical schools and in continuing medical education.<sup>14,15</sup> A recent survey of American physicians revealed that many more physicians would give dietary counseling to their patients except for the problem of various barriers.<sup>16</sup> Sixty-two percent felt that lack of knowledge about nutrition was one such barrier. Other major barriers included lack of time, poor patient compliance, inadequate counseling skills, and lack of adequate reimbursement.

In November 2008, National Health Services (NHS) Health Scotland commissioned a research to find out knowledge of and attitudes to, folic acid and vitamin D supplementation among health professionals such as health visitors, midwives etc, this also included two general practitioners and one Pediatrician. In general, the health professionals interviewed in this study were relatively well-informed about folic acid,

but not well-informed about vitamin D. Some recognized this, and expressed a desire for greater clarity about guidance in relation to vitamin D supplementation.<sup>17</sup>

Our study included doctors from all fields and they had knowledge regarding vitamin D but were reluctant to initiate therapy. Similar observations were made by Skedros et al when they surveyed 171 orthopedic surgeons in Utah, Idaho and Wyoming with the objective to determine the knowledge and opinions of orthopedic surgeons with regard to their opportunities for initiating medical treatment of patients with an osteoporotic fracture. 68% surgeons thought that it was appropriate to expand their orthopedic practice to include prescribing pharmacological treatments for osteoporosis. Of these, >77% felt most comfortable prescribing calcium and vitamin D supplements. But the study concluded that many do not initiate medical treatment and think that the patients' primary care providers should be responsible for medical care.<sup>18</sup>

Joiner et al carried a study in 510 pediatricians practicing in the states surrounding the Great Lakes. They found that most primary care pediatricians from major metropolitan areas in the region were aware of the appropriate methods to diagnose and treat vitamin D-deficiency rickets. However, educational interventions were still necessary for both physicians and parents to promote widespread use of vitamin D supplementation in all breastfed infants.<sup>19</sup>

Many studies have been carried out to gauge the level of knowledge of vitamin D in specified target populations, but to the best of our knowledge, no such study has been carried out in doctors in this region. A poll, commissioned by the National Osteoporosis Society in the UK, revealed that only 35% of the 2,000 UK adults knew that vitamin D is essential for healthy bones and almost a quarter of those surveyed said they did not know why they needed vitamin D, and only 6% correctly identified that going outside without sunscreen is the best way to obtain the 'sunshine' vitamin.<sup>20</sup> A survey was carried out in 1535 community-dwelling men with a mean age of 79 years to ascertain their knowledge of bone health and disease in USA. Only 39% correctly responded the question regarding vitamin D supplementation.<sup>21</sup>

A population survey was carried out in Hong Kong, China to understand about the prevailing attitudes and behavior towards sunlight and knowledge of vitamin D among Chinese middle-aged and elderly women. The survey results showed that the majority had heard about vitamin D, but knowledge about the role and sources of vitamin D was low. The survey

revealed that there was considerable ignorance and confusion about the role of sunlight in vitamin D production, and the function and sources of vitamin D. The study concluded that this presents a public health opportunity to re-address misconceptions, and to develop education strategies that are targeted and specific for susceptible populations and a major role is to be played by health care providers if the problem of vitamin D inadequacy needs to be addressed and prevention strategies implemented.<sup>22</sup>

Taken as a whole, our evidence indicates that doctors in Karachi need more training in nutrition particularly vitamin D. Accordingly, nutrition needs to be properly integrated into the medical education curriculum. In addition, vitamin D should be an essential part of continuing medical education as, first, most doctors have a deficient knowledge, and second, because the subject is rapidly evolving.

### CONCLUSION

It is essential that physicians be familiar with the spectrum of sources, metabolism and functions of vitamin D to identify people who may be at risk for developing vitamin D deficiency and its attendant complications such as osteoporosis and fractures.

### REFERENCES

1. Leboff MS, Kohlmeier L, Hurwitz S. Occult vitamin D deficiency in postmenopausal US women with acute hip fractures. *JAMA*. 1999;281:1505-1511.
2. Gaugris S, Heaney RP, Boonen S, Kurth H, Bentkover JD, Sen SS. Vitamin D inadequacy among post-menopausal women: A systematic review. *QJM*. 2005;98:667-676.
3. El-Hajj Fuleihan G, Nabulsi M, Choucair M, Salamoun M, Hajj Shahine C, Kizirian A, et al. Hypovitaminosis D in healthy schoolchildren. *Pediatrics*. 2001;107:E53.
4. Dawson-Hughes B. Racial/ethnic considerations in making recommendations for vitamin D for adult and elderly men and women. *Am J Clin Nutr*. 2004;80(Suppl 6):1763S-1766S.
5. Horlick MF. High prevalence of inadequate serum vitamin D levels and implications for health. *Mayo Clin Proc*. 2006;81(3):353-373.
6. Tangpricha V, Pearce EN, Chen TC, Holick MF. Vitamin D insufficiency among free-living healthy young adults. *Am J Med*. 2002;112:659-662.
7. Regnister JY. The high prevalence of inadequate serum vitamin D levels and implications for bone health. *Curr Med Res Opin*. 2005;21:579-585.
8. Isaia G, Giorgino R, Rini GB, Bevilacqua M, Maugeri D, Adami S. Prevalence of hypovitaminosis D in elderly women in Italy: Clinical consequences and risk factors. *Osteoporos Int*. 2003;14:577-582.
9. Siddiqui TS, Rai MI. Presentation and predisposing factors of nutritional rickets in children of Hazara division. *J Ayub Med Coll*. 2005;17(3):29-32.
10. Atiq M, Suria A, Nizami SQ, Ahmed I. Vitamin D status of breast-fed Pakistani infants. *Acta Paediatr* 1998;87(7):737-740.
11. Temple NJ. Survey of Nutrition Knowledge of Canadian Physicians. *J Am College Nut*. 1999;18(1):26-29.
12. Temple NJ. Organized medicine. An ounce of prevention or a pound of cure. In Temple NJ, Burkitt DB (eds): "Western disease: Their dietary Prevention and Reversibility." Totowa, NJ: Humana 1994: 381-398.
13. Feldman EB. Networks for medical nutrition education-a review of the US experience and future prospects. *Am J Clin Nutr*. 1995;62:512-517.
14. Heywood P, Wootton SA. Nutritional knowledge and attitudes towards nutrition education in medical students at Southampton University Medical School. *Proc Nutr Soc*. 1992;51:67.
15. Kirby RK, Chauncey KB, Jones BG. The effectiveness of a nutrition education program for family practice residents conducted by a family practice resident-dietitian. *Fam Med*. 1995;27:576-580.
16. Kushner RF. Barriers to providing nutrition counseling by physicians: survey of primary care practitioners. *Prev Med*. 1995;24:546-552.
17. Griesbach D. Knowledge and attitudes towards vitamin D and folic acid supplementation among health professionals and the public Edinburgh (Scotland): NHS Health Scotland: 2009.
18. Skedros JG, Holyoak JD, Pitts TC. Knowledge and opinions of orthopedic surgeons concerning medical evaluation and treatment of patients with osteoporotic fracture. *J Bone Joint Surg Am*. 2006;88(1):18-24.
19. Joiner TA, Cowan AE, Stringer SM, Akbar J. Primary care pediatrician knowledge of nutritional rickets. *J Natl Med Assoc*. 2002;94(11):971-978.
20. National Osteoporosis Society. UK lacks knowledge on vitamin D. London (England): National Osteoporosis Society; 2009.
21. Gaines JM, Marx KA, Caudill J, Parrish S, Landsman J, Narrett M, et al. Older Men's Knowledge of Osteoporosis and the Prevalence of Risk Factors. *J Clin Densitom* 2010;13(2):204-209.
22. Kung AWC, Lee KK. Knowledge of vitamin D and perceptions and attitudes toward sunlight among Chinese middle-aged and elderly women: A population survey in Hong Kong. *BMC Public Health*. 2006;6:226.

### Authors Contribution:

Waqas Ahmed Burney: Data collection, literature review, questionnaire design, analysis and writing of the manuscript.

Hafiz Abdul Moiz Fakhir: Literature review, questionnaire design, writing of the manuscript.

Razia Iftikhar: Literature review, questionnaire design, analysis.

Misbah Fakhir: Data collection, literature review, questionnaire design, analysis.

Asma Urooj: Data collection, literature review, questionnaire design, analysis.