

Vitamin D Deficiency



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Vitamin D Deficiency: The most common nutritional deficiency worldwide, characterised by serum 25-hydroxyvitamin D which minimises the effects on the skeleton and on calcium metabolism.

Causes:

- Insufficient dietary intake
- Pregnancy & lactation
- Obesity
- Impaired absorption - small bowel disease, pancreatic pathology
- Reduced sun exposure - cold climates
- Liver cirrhosis and & renal failure

General Signs & symptoms:

Mild deficiency may be asymptomatic, dental enamel hypoplasia, secondary hyperparathyroidism symptoms (fatigue, abdominal pain, kidney stones, polyuria, polydipsia)

Musculoskeletal manifestations:

- Localised or generalised bone tenderness/pain
- Localised or generalised myalgia
- Muscle cramps
- Waddling gait related to hypocalcemia and osteomalacia
- Muscle cramps
- Osteoporosis/ Osteopenia
- Fractures

Neurological manifestations:

- Peripheral paraesthesia in hands and feet
- Chvostek's sign (twitching of facial muscles in response to tapping over the facial nerve)
- Trousseau's sign (carpopedal spasm induced by pressure applied to the arm by an inflated blood pressure cuff)
- Irritability
- Depression
- Greater predisposition to conditions such as schizophrenia and multiple sclerosis

Cardio-respiratory manifestations:

- Greater predisposition to cardiovascular conditions such as myocardial infarction, congestive heart failure, peripheral arterial disease (PAD), stroke & hypertension
- Greater predisposition to respiratory conditions such as general upper respiratory tract infections and tuberculosis



Diagnosis:

- X-ray of weight-bearing areas - fractures or vertebral compression fractures
- Dual energy X-ray absorptiometry - to detect reduced bone mineral density

Blood test investigations:

- Decreased serum 25 hydroxyvitamin D level
- Elevated markers of bone turnover (alkaline phosphatase)
- Decreased serum calcium
- Increased parathyroid hormone

Treatment:

- Vitamin D3 supplementation
- Dietary modification - fish, egg yolk & fortified food products
- UV light/ natural sunlight exposure
- Increase calcium intake

Want to learn more?

With AcePhysio the learning journey doesn't stop here! Take a look at our further reading recommendations below to gain a deeper understanding on how vitamin D deficiency influences clinical Physiotherapy:

1. Heidari B, Shirvani J, Firouzjahi A, Heidari P, Hajian-Tilaki K. Association between nonspecific skeletal pain and vitamin D deficiency. International Journal Of Rheumatic Diseases [serial online]. October 2010;13(4):340-346. Available from: Academic Search Premier, Ipswich, MA. Accessed March 28, 2013.
2. Holick MF. A call to action: pregnant women in-deed require vitamin D supplementation for better health outcomes. J Clin Endocrinol Metab. 2019 Jan 1;104(1):13-5.
3. Sprague S, Petrisor B, Scott T, et al. What is the role of vitamin D supplementation in acute fracture patients? A systematic review and meta-analysis of the prevalence of hypovitaminosis D and supplementation efficacy. J Orthop Trauma. 2016 Feb;30(2):53-63.