



Vitamin D Deficiency in Pakistan

Awareness, Lab Values, and Clinical Guidance

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1 BACKGROUND

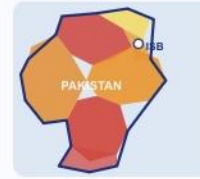


Vitamin D (Cholecalciferol / Ergocalciferol) — fat-soluble vitamin

- Bone mineralization
- Muscle function
- Immune regulation
- Cell proliferation / differentiation

2 EPIDEMIOLOGY IN PAKISTAN

70–90% of adults are **vitamin D deficient** in Pakistan



HIGH-RISK GROUPS

- Women (limited sun exposure)
- Elderly
- Children
- Dark-skinned individuals
- Indoor workers



PREVALENCE BY GENDER



PREVALENCE BY AGE GROUP



3 ETIOLOGY / RISK FACTORS

VITAMIN D DEFICIENCY RISK FACTORS

Lifestyle

Indoor sedentary habits, minimal sun exposure

Skin Pigmentation

Darker skin reduces UV-mediated synthesis

Diet

Low intake of fatty fish, eggs, fortified foods

Medical Conditions

Malabsorption, liver/kidney disease

4 CLINICAL MANIFESTATIONS

SYSTEM	FINDINGS
Skeletal	Rickets (children), Osteomalacia (adults), Osteoporosis
Muscular	Weakness, cramps, increased risk of falls
Immune	Frequent infections
Neuropsychiatric	Depression, cognitive impairment

5 LAB EVALUATION

Serum 25(OH)D Levels

Deficient < 20 ng/mL

Insufficient 20 – 30 ng/mL

Sufficient 30 – 100 ng/mL

Toxic > 150 ng/mL

Optional: Serum calcium, phosphate, PTH for follow-up

6 MANAGEMENT GUIDELINES



Sunlight

10–30 min, 3 times/week (face & forearms)



Diet

Fatty fish, egg yolks, fortified milk/cereals



Supplements: Vitamin D3

600–2000 IU/day adults; 400–1000 IU/day children



Follow-up

Recheck 25(OH)D after 3 months

7 MYTHS VS FACTS

✗ MYTH

✗ Sunlight always sufficient

✗ Only children need vitamin D

✗ Supplements are harmful

✓ FACT

✓ Dark skin, clothing, pollution reduce synthesis

✓ Adults, elderly, pregnant women are high risk

✓ Safe within recommended doses; toxicity is rare

8 KEY TAKEAWAYS / CALL TO ACTION



Vitamin D deficiency is **highly prevalent** in Pakistan



Early detection **prevents musculoskeletal** and systemic complications



Promote sunlight, diet, supplementation, and **patient education**

Get your Vitamin D levels checked.

Stay strong, healthy, and active!

