

- Nutrition / Osteoporosis

## Strengthen your bones before it's too late

Ignoring nutrient deficiencies today could mean brittle bones tomorrow — here's how to stay ahead of osteoporosis

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When it comes to bone health, what you eat — or don't — can make or break you, quite literally. Experts emphasise that deficiencies in essential nutrients like calcium, vitamin D, and magnesium can lead to a cascade of skeletal woes, with long-term consequences that go far beyond brittle bones.



“Calcium, vitamin D, and magnesium are the holy trinity for maintaining bone density and strength,” says Dr Ranjith Narayan, Specialist Orthopaedics at Aster Hospital, Mankhool. Calcium serves as the foundational building block for bones, while vitamin D acts as a facilitator, ensuring calcium is properly absorbed. Magnesium, meanwhile, regulates bone turnover and mineralisation. Deficiencies in any of these can leave bones weak, brittle, and prone to fractures, with conditions like osteopenia or osteoporosis lurking around the corner.

Over time, untreated deficiencies don't just stop at fractures — they can lead to chronic pain, limited mobility, and a significantly diminished quality of life. “Addressing these deficits early is crucial,” stresses Dr Narayan. “A balanced diet and routine health check-ups can prevent irreversible bone damage and complications.”

But are food sources alone enough to meet these nutrient needs? Not always, claims Dr Ahmad Baha Mousa, Consultant Orthopedic Surgeon at Burjeel Medical City. He explains that while calcium and magnesium are easier to integrate into your diet, vitamin D is a different story. “Obtaining sufficient vitamin D from food is almost impossible. For example, you'd need to eat 3 kilograms of fish daily to match your body's requirement. A much simpler solution? Just 30 minutes of sunlight,” he quips. Without adequate vitamin D, the body struggles to deposit calcium into bones, leading to bone loss and fragility over time. The story doesn't end with calcium and vitamin D. Magnesium plays an unsung yet vital role, says Dr Rajesh Garg, Specialist Orthopedic Surgeon at Thumbay University Hospital. “Magnesium helps regulate calcium levels and ensures proper functioning of bone cells. Without it, bones become brittle, and the risk of fractures and chronic conditions like osteoporosis rises significantly.”

For those at higher risk, like postmenopausal women and the elderly, supplementation programs are highly recommended. Dr Chetan Prakash, Specialist Orthopedic Surgeon at Zulekha Hospital, Dubai,

points out that calcium and vitamin D supplementation can effectively bridge dietary gaps. “Randomised controlled trials show clear benefits, especially when dairy intake is insufficient or sunlight exposure is limited,” he explains. Magnesium, too, plays a pivotal role, influencing everything from bone crystal formation to parathyroid hormone activity.

Ignoring these deficiencies can spell disaster in the long run. “The risks extend beyond bones to weight issues, increased inflammation, and even certain cancers,” warns Dr Prakash. The consensus? A proactive approach to nutrient intake can mean the difference between strong bones and a fragile future. So, whether it's a glass of milk, a stroll in the sun, or a handful of nuts, your bones will thank you.

#### Better nutrition

If you're skimping on calcium, vitamin D, and magnesium, your bones might just be plotting their revenge. The link between these nutrient deficiencies and osteoporosis is crystal clear, and ignoring it is like rolling the dice with your skeletal health.

“Osteoporosis is a chronic condition where reduced bone density leads to a higher risk of fractures,” explains Dr Ahmed Fawaz Moursy, Specialist Orthopedic Surgeon at Zulekha Hospital, Dubai. Calcium, magnesium, and vitamin D are essential for maintaining strong bones. “About 99 per cent of the body's calcium is stored in bones and teeth. Without enough calcium, bones lose their strength and become prone to fractures,” he says. Vitamin D plays a pivotal role in calcium absorption, while magnesium regulates calcium balance and supports the cells responsible for bone formation and resorption. Together, these nutrients create a fortress of bone health — when they're lacking, that fortress crumbles.

The consequences of these deficiencies aren't just theoretical. “A lack of calcium, vitamin D, or magnesium can lead to imbalances that weaken bones and increase the risk of osteoporosis, particularly in older adults,” says Dr Garg.

So, how do you fight back? Experts recommend a multi-pronged approach to maintain bone strength and reduce osteoporosis risk. “A diet rich in dairy, leafy greens, nuts, and fortified foods is a great start,” says Dr Narayan. He emphasises the importance of moderate sun exposure for natural vitamin D synthesis and regular weight-bearing exercises to strengthen bones.

For those struggling to get enough nutrients through food, supplementation can fill the gaps. “The recommended daily intake is 1,000–1,200 mg of calcium, 310–420 mg of magnesium, and 600–800 IU of vitamin D,” explains Dr Moursy, adding that bone density tests can help identify deficiencies early. But don't forget lifestyle tweaks. “Avoid smoking and limit alcohol consumption — they're notorious bone thieves,” warns

Dr Garg. And a simple habit like taking a daily 30-minute walk in the sun can go a long way, notes Dr Mousa. He advises replacing fast food with nutrient-dense options like milk, cheese, eggs, and green vegetables. “It's all about balance. You can't out-supplement a bad diet or sedentary lifestyle,” he believes.

#### Micronutrient deficiencies

Think skipping the greens and lounging indoors won't catch up with you? Think again. Recent research reveals that deficiencies in crucial micronutrients like calcium, vitamin D, and magnesium are more widespread than ever, leaving many vulnerable to health issues. But the good news? A few simple tweaks can put you back on track.

“Dietary gaps and sedentary lifestyles are at the core of these deficiencies,” says Dr Narayan. Calcium, magnesium, and vitamin D are the big players, and tackling deficiencies starts on your plate. “Incorporate calcium-rich foods like dairy, tofu, and kale, and add magnesium-packed options like nuts, seeds, and whole grains,” he advises. For vitamin D, fortified foods and safe sun exposure are key. “Even a 10-minute walk in the sun can make a difference,” he claims.

Getting these nutrients in check is only half the battle. Lifestyle changes are equally critical. “Weight-bearing exercises like walking or yoga not only support bone health but also improve how your body

utilises these nutrients,” says Dr Narayan. He also recommends avoiding excessive caffeine and alcohol, which can deplete bone minerals. Dr Garg echoes these sentiments but adds that supplementation may be necessary in some cases. “If you’re struggling to meet daily requirements through food alone, consult a healthcare provider for tailored supplements,” he suggests. His top picks for a nutrient-rich diet? Dairy products, leafy greens, fortified cereals, nuts, seeds, and fatty fish like salmon. He also underscores the importance of weight-bearing exercises, which help maintain bone density over time. Outdoor activities take the spotlight in Dr Mousa’s recommendations. “Daily exercise like walking or cycling outdoors, combined with early morning or evening sunlight exposure, supports your body’s natural vitamin D production,” he says. For a balanced diet, he emphasises calcium from leafy greens, magnesium from nuts, and vitamin D from fatty fish.

Avoid excessive caffeine and alcohol as they can deplete bone minerals.

### Spot the signs

Think osteoporosis is just an old-age problem? Think again. Nutrient deficiencies, like those in calcium, vitamin D, and magnesium, can quietly erode your bone health long before any fracture sounds the alarm. Spotting the signs early and taking preventive measures can make all the difference.

“Early signs of nutrient deficiencies in bone health are often subtle,” says Dr Narayan.

“Unexplained fatigue, muscle weakness, brittle nails, and bone pain can be red flags.” More advanced symptoms like frequent fractures, height loss, or a stooped posture suggest severe bone density loss and the urgent need for medical attention.

But how do these deficiencies lead to such dire outcomes? It’s all about the bones’ building blocks. Calcium gives bones their strength, vitamin D ensures calcium absorption, and magnesium regulates bone metabolism.

“A lack of any of these nutrients weakens the skeletal structure, increasing the risk of fractures and osteoporosis,” explains Dr Mousa, Consultant Orthopedic Surgeon at Burjeel Medical City. He warns that symptoms like persistent muscle cramps or joint pain may indicate underlying deficiencies.

So, when should you consider supplementation? “If dietary adjustments aren’t enough to meet daily nutrient needs or deficiencies are confirmed through medical tests, supplementation is the next step,” says Dr Narayan. High-risk individuals, like postmenopausal women or those with limited sun exposure, should especially consider this option under a doctor’s guidance.

Dr Garg agrees, adding that common signs like tingling or numbness in the fingers, weak nails, or unusual fatigue should not be ignored. “If these symptoms persist, it’s crucial to consult a healthcare professional to assess nutrient levels,” he advises. Supplements can be an effective way to restore balance, particularly when lifestyle changes alone aren’t sufficient.

Preventing osteoporosis starts with proactive care. A balanced diet rich in calcium (from dairy and leafy greens), magnesium (from nuts and seeds), and vitamin D (via sunlight or fortified foods) is a must. Pair that with regular weight-bearing exercises, like walking or yoga, to keep bones strong and healthy. And, as Dr Mousa suggests, “a simple 10-minute walk in the sun each day can make a significant difference.” The bottom line? Listen to your body and don’t wait for a fracture to get the message. Spot the signs, adjust your habits, and consult a professional if needed. Your bones will thank you for it.