

Vital Vitamin D

Kellogg's® Factsheet



The prevalence of low vitamin D status in the Arab Gulf is alarmingly high. Despite the abundance of sunshine, studies show that almost eight out of ten of the UAE population and most adults living in KSA suffer vitamin D deficiency^{1,2}. In fact, studies have shown low vitamin D status to be very common among all age groups throughout the whole Arab Gulf region³. Vitamin D deficiency is one of the most pressing nutritional challenges facing the Arab Gulf today.

Vitamin D, strictly speaking isn't a vitamin, but is in fact a pro-hormone. Dietary sources of vitamin D are sparse and are thought to provide between ten to fifty percent of vitamin D status, with the remainder manufactured in the skin from the sun's ultra violet light (UVB)⁴. Low levels of vitamin D are linked to bone disorders, including rickets (soft bones) in children and osteomalacia and osteoporosis in adults⁵. A combination of traditional dress, limited sun exposure and outdoor activity due to the hot climate, the increasing use of sun creams, combined with limited dietary sources fortified with vitamin D, means that the majority of the population is failing to meet their vitamin D needs⁴.

Bone mineral density is reported to be significantly lower among healthy women in KSA compared to their counterparts in the US⁶.

Despite abundant sunshine allowing vitamin D production by the skin all year round, the Arab Gulf registers some of the lowest levels of vitamin D and highest rates of hypovitaminosis D worldwide⁴.

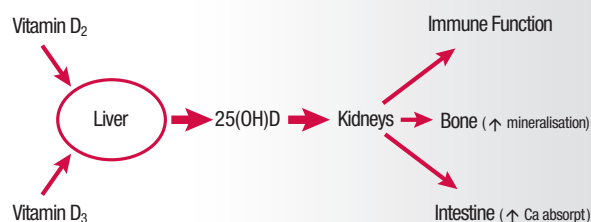
Evidence is emerging that a low vitamin D status may also increase the risk of developing other diseases, such as hypertension, diabetes mellitus, cardiovascular disease and auto-immune disorders like Multiple Sclerosis⁷. However, the exact optimal Vitamin D intake or status in relation to the aforementioned conditions remains unclear.

Vitamin D and Bone Health

Maintaining an adequate vitamin D status is necessary for the efficient absorption of calcium from the diet, and for the maintenance of normal blood levels of calcium and phosphate that are needed for the effective mineralisation of bone.

The synthesis of vitamin D in the skin by the action of sunlight is insufficient to meet requirements in Arab Gulf countries. This is particularly a problem for women where a combination of traditional dress and few outdoor activities limit vitamin D synthesis further. It is therefore necessary that adequate intake of dietary vitamin D is achieved to maintain a vitamin D status that is sufficient for normal bone mineralisation, throughout both childhood and adolescence, as well as for bone maintenance in adulthood⁷. Low levels of vitamin D have been shown to reduce bone mineral accumulation in children and adolescents, and to accelerate bone loss in adults and the elderly⁷.

VITAMIN D METABOLISM





Many of Kellogg's breakfast cereals now provide 1.3µg vitamin D in a single 30g serving - this may be shown as a vitamin D flash on front of pack, or check the nutritional table on side of pack. In addition, most breakfast cereals are consumed with milk, providing the ideal balanced combination of vitamin D and calcium.

What is Vitamin D Deficiency?

There is currently no accepted 'optimal' level of vitamin D. However, research shows that blood levels of 25-hydroxyvitamin D—a form of the vitamin—below 20 nmol/L are considered to be deficient, and levels below 30 nmol/L have been suggested to be 'insufficient'⁴.

GROUPS AT INCREASED RISK OF VITAMIN D DEFICIENCY INCLUDE:

- Those with inadequate direct exposure to sunlight
- Infants & adolescents
- People with darker skin tones as they require increased sun exposure to make vitamin D compared to those with fairer skin
- Women, particularly during pregnancy and breastfeeding
- People with disabilities or are confined indoors
- Urban populations

Vitamin D



Recommended Intakes of Vitamin D

Determining recommended intake levels for vitamin D is difficult, as vitamin D in the body may come from dietary sources or from synthesis in the skin through sunlight exposure. The amount of sun exposure one receives varies greatly from person to person, depending on daily activities and dress. In addition people are advised against excessive sun exposure to reduce the risk of skin cancer. The level of pigmentation in the skin also affects vitamin D synthesis as darker skin requires increased sunlight exposure to synthesise vitamin D compared to lighter skin. Research suggests assuming minimal sun exposure when setting recommended intakes.

TABLE 1: DIETARY RECOMMENDATIONS AND REPORTED INTAKE FOR VITAMIN D

AGE GROUP	OMAN Recommended Intake ⁸	UAE Recommended Intake ¹	UAE % Below Recommended Intake ¹⁵	KSA % Below Recommended Intake ^{16,17}
1-3 years	2.5-5.0µg	15.0µg		
4-8 years	3.5-7.0µg	15.0µg	96%	83% < 5.0µg/day
9-13 years	5.0-10.0µg males 4.8-9.5µg females	15.0µg	100% males 98.5% females	83% < 5.0µg/day
14-18 years	7.5-15.0µg males 6.0-12.0µg females	15.0µg	100% males 99% females	83% < 5.0µg/day
19-70 years	5.3-12.0µg males 4.5-10.0µg females	15.0µg		87%
70+ years	4.5-9.0µg males 4.0-8.0µg females	20.0µg		
Pregnancy	5.3-13.5µg	15.0µg		
Lactation	6.0-15.0µg	15.0µg		

Tips to Avoid Vitamin D Deficiency

- Consume a portion of oily fish at least 1-2 times per week
- Expose the face, arms, hands, or back to direct sunlight for 15 minutes daily or at least three days a week, and without applying sun block¹
- Take vitamin D supplements in the form of tablets or injections (consult your doctor first)
- Choose foods fortified with vitamin D, such as breakfast cereals, dairy milk, soy milk and orange juice (check labels)

Fortified breakfast cereals can make a valuable contribution to micronutrient intakes in the Arab Gulf Region.

For example, in the UK where fortified breakfast cereals are consumed frequently, these contribute 13% of average daily vitamin D intakes in men and women⁹ and 20% of average daily vitamin D intakes in girls and 24% in boys¹⁰.

DIETARY SOURCES OF VITAMIN D

	VITAMIN D per 100g (µg)	VITAMIN D per TYPICAL PORTION (µg)	PORTION SIZE
Mackerel (Kanad)	8.0µg	6.4µg	80g
Sardines (Ooma)	3.9µg	3.16µg	80g
Red Snapper	2.3µg	1.8µg	80g
Tuna (canned)	1.1µg	0.9µg	80g
Eggs	3.2µg	1.6µg	1 medium egg
Kellogg's breakfast cereals - (Corn Flakes, Coco Pops, Rice Krispies, etc)	4.2µg	1.3µg	30g bowl
Fresh Milk/Yoghurt - (Check labels)	0-10.0µg/litre	0-2.5µg	250ml

Sources: Little information is available on the vitamin D content of foods commonly found across the Arab Gulf region, therefore information is provided on typical content of food from dietary analysis undertaken in the UK. Dietplan 6 9 Forestfield software, DH (2013) Nutrient Analysis Eggs, DH (2013) Nutrient Analysis of Fish, and company websites e.g. Kellogg's, Unilever etc.



Vitamin D Facts:

- Few data exist on vitamin D intakes for children in the region, however where these have been measured intakes average just 1–2µg/day¹⁵, compared to recommended intake of 5–15µg/day¹⁸
- For a given exposure to sunlight, older skin forms less vitamin D – hence dietary requirements for older people are higher than that of younger people
- Natural sources of vitamin D are scarce – restricted mainly to oily fish (kipper, herrings, salmon etc.) and eggs
- Fortified foods such as breakfast cereals, milk, yoghurts and cheese are another significant source of vitamin D (check labels)
- Choosing to eat foods fortified with vitamin D regularly has been shown to effectively boost levels of vitamin D in the body¹¹

The relationship between calcium, vitamin D and bone health is sufficiently strong for EFSA (European Food Safety Authority) to have approved a health claim that “Calcium and vitamin D are needed for the maintenance of normal bone”¹³. Calcium and vitamin D are needed for normal growth and development of bone in children. They are also needed for the maintenance of normal bones in adults.

Sunshine, Vitamin D & Sunburn

The skin can manufacture vitamin D from sunlight and this is thought to provide 50–90% of vitamin D status in the Arab Gulf. However, an increasingly sedentary lifestyle, and traditional dress limiting sub exposure, combined with limited dietary sources mean that combating vitamin D deficiency has been identified as an important priority for the region⁴.

Using sunscreen blocks vitamin D production - in fact a sun cream with SPF 8 blocks 95% of vitamin D production in the skin⁷ – most children’s sun creams are SPF 30 or 50!

When it comes to sun exposure, little and often is best for vitamin D production – regularly being outside around the middle part of the day without sun cream for a matter of minutes is sufficient to make vitamin D without burning the skin¹².

Recommendation from the Dubai Health Authority is to expose the face, arms, hands, or back to direct sunlight for 15 minutes daily or at least 3 days a week without applying sunscreen creams¹.

Effective sunlight in the Arab Gulf is not limited to the lunch-time period, in fact sun exposure at this time of day is likely to be uncomfortable due to high environmental temperatures at some parts of the year.

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