Health Conditions in Which Vitamin D Plays an Important Role

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Story at-a-glance

- Vitamin D may be one of the simplest solutions to a wide range of health problems, from diseases of the eyes, to the bowels, and conditions rooted in chronic inflammation and immune dysfunction in particular
- If you have any of the following conditions, optimizing your vitamin D is indicated: dry eye, macular degeneration, multiple sclerosis, bowel diseases, rheumatic diseases, HIV, depression, and pregnancy
- To maximize benefits, you need a vitamin D level of at least 40 ng/ml (a more ideal level may be 50 to 70 ng/ml) from all sources — sun exposure, tanning bed, vitamin D-containing foods, and/or vitamin D supplements

Vitamin D is crucial for good health, and may be one of the simplest solutions to a wide range of health problems, from diseases of the eyes to the bowels, and conditions rooted in chronic inflammation and immune dysfunction in particular. Vitamin D deficiency is common around the world, even in sundrenched areas, yet many people, including physicians, are unaware they may be lacking this important nutrient.

Even the Indian Medical Association[1] is pushing for a nationwide awareness campaign, noting that vitamin D deficiency is prevalent in India, making people more vulnerable to chronic diseases such as diabetes, heart attacks, stroke and cancer. Despite its name, vitamin D is actually a steroid hormone, which you get primarily from either sun exposure or supplementation, along with some foods. Many of its health benefits are due to its ability to influence genetic expression.

Moreover, researchers have discovered that vitamin D is involved in the biochemical cellular machinery of ALL cells and tissues in your body. Hence, when you don't have enough, your entire body struggles to function optimally. In this article I will review a number of the more recently appreciated health conditions in which vitamin D deficiency may play a significant role.

As a general rule, it would be wise to improve your vitamin D status regardless of what ails you, but if you suffer from any of the following conditions, optimizing your vitamin D is clearly indicated. Remember that while sunlight is the ideal way to optimize your vitamin D, winter and work prevent more than 90 percent of those reading this article from achieving ideal levels without supplementation. The only one to know you have therapeutic levels of vitamin D is to measure it.

Dry Eye Syndromes and Macular Degeneration

According to a recent study published in the International Journal of Rheumatic Diseases,[2,3] *"patients with vitamin D deficiency should be evaluated for dry eye syndromes."* You could easily turn that around and say that anyone with dry eye syndrome would be advised to optimize their vitamin D.

What these researchers found was that premenopausal women who were deficient in vitamin D had a greater risk of dry eye and impaired tear function. According to the authors:

"Dry eye and impaired tear function in patients with vitamin D deficiency may indicate a protective role of vitamin D in the development of dry eye, probably by enhancing tear film parameters and reducing ocular surface inflammation."

Vitamin D deficiency may also raise your risk of age-related macular degeneration (AMD) if you are genetically predisposed to it. AMD is the No. 1 cause of blindness among American seniors, and in this study,[4,5] the odds of manifesting the disease was greatest among women who had a combination of two risk alleles (genetic mutations) and the lowest vitamin D levels. Overall, these women were nearly seven times more likely to develop AMD compared to women without the high risk genotype and who also had sufficient vitamin D.

According to the authors, their finding suggests *"a synergistic effect between vitamin D status and complement cascade protein function."* Lead author Amy Millen also noted:[6]

"Most people have heard that you should eat carrots to help your vision. However, there appear to be many other ways that adequate nutrition can support eye health. Having adequate vitamin D status may be one of them.

This is not a study that can, alone, prove a causal association, but it does suggest that if you're at high genetic risk for AMD, having a sufficient vitamin D status might help reduce your risk."

Link Between Vitamin D Deficiency and Multiple Sclerosis Strengthened

I will now review three autoimmune diseases that vitamin D impacts. This is not an exclusive list, and I strongly believe that vitamin D can have a beneficial impact on all autoimmune diseases. At least a dozen studies[7] have noted a strong link between multiple sclerosis (MS) and vitamin D deficiency. A number of them have shown that your risk of MS increases the farther away you live from the equator, suggesting lack of sun exposure amplifies your risk. Moreover, this heightened risk is magnified if you have a lack of sun exposure before the age of 15.

MS is a chronic, neurodegenerative disease of the nerves in your brain and spinal column, caused through a demyelization process. It has long been considered a "hopeless" disease with few treatment options. The typical prescription for MS focuses on highly toxic immune suppressing medications like prednisone and interferon. However, research over the past few years suggests

MS may be improved using vitamin D. Studies also indicate that vitamin D can serve in a protective capacity, and clearly it's preferable to prevent it than trying to treat it once it develops.

Canadian researchers[8] recently reconfirmed the link between vitamin D deficiency and MS, noting that patients who have genetic variations that cause them to have low vitamin D levels are far more likely to develop the disease. (So far, four genetic variations have been found that appear to cause low vitamin D.)

According to co-author Dr. Brent Richards, the researchers *"feel that the evidence we have supports a causal relationship, but it does not prove it."* Additional research is needed to determine whether vitamin D sufficiency might delay or prevent the onset of MS in such individuals.

Craig Moore, a neuroscience researcher at Memorial University of Newfoundland, questions whether vitamin D supplementation would benefit those with this type of genetic variance, saying:[9] *"Is their body going to do what it needs to with vitamin D? It's not going to exert the effects that it otherwise would."*

I believe optimizing your vitamin D level is of great importance if you have MS, but it's not the only factor. For additional treatment suggestions, please see my previous article discussing natural MS treatment guidelines.

Vitamin D May Be 'Vital' for Prevention of Bowel Diseases

Researchers in New Zealand recently highlighted the importance of vitamin D in the prevention of gastrointestinal diseases, including cancer. According to Professor Lynn Ferguson:[10]

"Gastrointestinal diseases such as colorectal cancer and inflammatory bowel disease are becoming increasingly common worldwide, including among children and adolescents. This is a substantial burden on health care and a changing vitamin D intake through reduced exposure to sunlight not compensated through diet, may play a key role in susceptibility to such disorders."

Clearly, sun avoidance is a major part of the problem, and it's important to weigh the risks versus the benefits when it comes to sun exposure. Contrary to popular belief, which states that sun exposure in general promotes skin cancer, sensible sun exposure may actually help *prevent* not only skin cancer, but many internal cancers as well. However, you never want to stay out long enough to get burned.

There's ample evidence showing that sun exposure is the ideal way to optimize your vitamin D level, but supplements and food can also be used. As discussed in my interview with vitamin D expert Dr. Robert Heaney, to reap maximum benefit you need a vitamin D level of at least 40 to 60 ng/ml (a more ideal level may be 50 to 70 ng/ml), and to get there, you may need around 5,000 to 6,000 IUs of vitamin D3 per day or more from ALL sources, which include sun, UVB light from a tanning bed, vitamin D supplements, and food.

In recent years, researchers have determined that vitamin D is actually more common in food than previously thought, especially meat. Until recently, we just didn't know how to measure it. This explains why people who never take supplements and rarely get sun exposure may still have appreciable (if inadequate) serum 25(OH)D levels — they're getting it primarily from their diet. As reported by the featured article:[11]

"Although few foods contained significant amounts of vitamin D, important sources in the diet could include fatty fish, such as salmon or tuna, fish liver oils, and eggs. Small amounts of vitamin D were also found in beef liver, cheese, and other dairy products."

Vitamin D's Role in Inflammatory Rheumatic Diseases

Additional evidence linking vitamin D deficiency and chronic inflammatory rheumatic diseases (CIRD) has also emerged. CIRD includes but is not restricted to rheumatoid arthritis (RA); it refers to over 100 different conditions rooted in chronic inflammation affecting your joints. In general, CIRD is thought to be linked to autoimmune dysfunction.

A recent study[12] involving more than 2,200 patients diagnosed with various types of arthritis found that just over 40 percent of those with rheumatoid arthritis were deficient in vitamin D, with a 25-hydroxyvitamin D level of 20 ng/ml or less. Nearly 40 percent of those with ankylosing spondylitis, and almost 41 percent of those with psoriatic arthritis were also vitamin D deficient. In contrast, less than 27 percent of the controls had vitamin D deficiency.

As reported by Rheumatoid Arthritis News:[13]

"This study shed new insights on the impact of vitamin D deficiency in patients with CIRD and these results might be of considerable interest in future daily clinical practice. In spite of lower disease activity, patients with RA have considerable risk of vitamin D deficiency. Hence, monitoring levels of vitamin D in these patients is an important issue, which can be managed by administrating vitamin D supplements or extended exposure to sunlight if available."

Vitamin D Deficiency Common in Those With Lupus

According to researchers in Cairo,[14] most patients with systemic lupus erythematosus (SLE) have some level of vitamin D deficiency (defined as a level of 10 ng/ml or less) or insufficiency (a level between 10 and 30 ng/ml). Those with lower levels also tend to have greater difficulty controlling their disease. On average, patients with SLE had *significantly* lower serum 25(OH)D than the healthy participants — an average of 17.6 ng/ml compared to 79 ng/ml. More than 73 percent of lupus patients had insufficient vitamin D levels, and over 23 percent were deficient.

According to the researchers: *"Routine screening and consequent repletion of vitamin D if needed is recommended in SLE. Restoring adequate vitamin D levels in SLE should be more explored as a potential and simple, yet valuable, measure to be added to their usual management to alleviate their condition."*

Vitamin D for HIV/AIDS

Vitamin D is well-known for its ability to combat infections and strengthen immune function, and researchers now suggest vitamin D supplements may be an easy and affordable way to fight even more serious infections like HIV.[15,16] A team composed of researchers from the U.S., U.K., and South Africa enlisted 100 Cape Town residents between the ages of 18 and 24 to assess the impact of sun exposure, dietary vitamin D, genetics and skin pigmentation on vitamin D levels in the blood. The study[17] also looked for signs of improved resistance to HIV.

After accounting for diet, genes and skin color, sun exposure was found to be the strongest determining factor for vitamin D blood levels. During winter months, vitamin D deficiency was common among all participants regardless of skin tone. In terms of the effect vitamin D had on HIV, it was found to reduce HIV replication and increase white blood cell counts, suggesting it might help slow disease progression. As reported by SciDev.net:[18]

"Researchers took winter and summer blood samples from both groups between February and August 2013 ... and exposed them in vitro (in test tubes) to HIV.

After giving each of 30 Xhosa participants a weekly dose of 50,000 IU of cholecalciferol (a type of vitamin D) for six weeks during the winter, samples showed a decrease in infection that was at par with that exhibited in summer samples. They also showed an increase in white blood cells, and decreased risk of anemia.

'In South Africa, where we have a high incidence of HIV, and we know infection and ARVs [antiretroviral medicines] can cause vitamin deficiencies, supplementing could be an affordable and effective adjunct therapy,' [lead author Anna] Coussens says."

Vitamin D and Depression

Your mental health may also suffer when you're vitamin D deficient. Previous research has shown having a vitamin D level below 20 ng/mL may raise your risk for depression by as much as 85 percent, compared to having a vitamin D level greater than 30 ng/mL. A number of studies have also confirmed that vitamin D supplementation can help alleviate symptoms of depression.

Most recently, a study published in Psychiatry Research[19] looked at healthy women aged 18 to 25 who lived in the Pacific Northwest during the fall, winter and spring, and found that vitamin D insufficiency (30 ng/ml or lower) could predict the emergence of clinically significant depressive symptoms after controlling for factors such as season, body mass index, race, diet, exercise and time spent outdoors.

By the fourth and final week of the study, 46 percent of the women were found to have insufficient levels of vitamin D, and during the course of the study up to 42 percent of them showed signs of clinically significant depression, based on the Center for Epidemiologic Studies Depression scale. As reported by HCP Live:[20]

"'Vitamin D supplements are inexpensive and readily available,' [lead author David] Kerr concluded, adding that the findings are consistent with literature that supports seasonal depressive symptoms. 'They certainly shouldn't be considered as alternatives to the treatments known to be effective for depression, but they are good for overall health.'"

Vitamin D Deficiency During Pregnancy Linked to Elevated Risk of Childhood Asthma

Last but certainly not least, optimizing your vitamin D during pregnancy is crucial not only for your own health, but also for the short- and long-term health of your child.[21] According to previous studies,[22] you need a vitamin D level above 40 ng/ml to protect your baby from serious complications such as premature delivery and preeclampsia, and studies have confirmed there's a *lifelong* impact of vitamin D deficiency in pregnancy — ranging from childhood allergies to asthma, colds and flu, dental cavities, diabetes, and even strokes and cardiovascular disease[23,24] in later life.

Two recent studies[25,26] highlight the preventive power afforded by vitamin D during pregnancy against the development of childhood asthma. In the first, levels of vitamins D and E in the diets of pregnant mothers were assessed during early pregnancy, and then compared to health outcomes 10 years later. Children born of mothers who had low levels of these two vitamins in their diet had an increased risk of developing asthma by the age of 10. As noted by Lung Disease News:[27]

"The long follow-up is important as it shows that the pregnant woman's diet is important throughout the life of her child."

The second study found that airway cells taken from newborns whose mothers had vitamin D and E deficient diets were more reactive against irritants and allergens, indicating a greater immune response. I firmly believe optimizing your vitamin D during pregnancy is one of the most important prenatal interventions you can implement for the health of your child. When a child is born deficient in vitamin D, his or her health can be significantly affected — in some cases for life.

The Protect Our Children *NOW!* campaign, discussed in the video above, has been launched to combat the problem of rising vitamin D deficiency among pregnant women, not only in the US, but around the world. The campaign will also raise global awareness about the general health risks associated with vitamin D deficiency. To learn more about this important campaign, including details on how to sign up, please following the hyperlink provided.

Vitamin D — A Simple, Inexpensive Way to Improve Your Health

An estimated 50 percent or more of the general population is at risk of vitamin D deficiency and insufficiency. Among school aged children, that percentage may be as high as 70 percent. As revealed above, this can raise your chances of any number of chronic or debilitating conditions.

Increasing levels of vitamin D3 among the general population could potentially prevent chronic diseases that claim nearly 1 million lives throughout the world each year. Incidence of several types of cancer could also be slashed in half. Vitamin D also effectively fights infections of all kinds, including the common cold and influenza, and perhaps even HIV.

Fortunately, the solution is both simple and inexpensive. Remember, to maximize the benefits of vitamin D, you need a vitamin D level of at least 40 to 60 ng/ml (a more ideal level may be 50 to 70 ng/ml), and all sources count — be it from sensible sun exposure, a tanning bed (restrict your use of tanning beds to those that use *electronic ballasts*), vitamin D-containing foods, and/or vitamin D supplements.

While sunlight is the ideal way to optimize your vitamin D, winter and work prevent more than 90 percent of those reading this article from achieving ideal levels without supplementation. The only one to know you have therapeutic levels of vitamin D is to measure it, and typical effective doses are between 5,000 to 10,000 units per day.

The Role of Vitamin D in Disease Prevention

A growing body of evidence shows that vitamin D plays a crucial role in disease prevention and maintaining optimal health. There are about 30,000 genes in your body, and vitamin D affects nearly 3,000 of them, as well as vitamin D receptors located throughout your body.

According to one large-scale study, optimal Vitamin D levels can slash your risk of cancer by as much as 60 percent. Keeping your levels optimized can help prevent at least 16 different types of cancer, including pancreatic, lung, ovarian, prostate, and skin cancers.