Research shows vitamin D deficiency puts HIV-positive Africans at risk

The best understood function of vitamin D is the role it plays in conjunction with calcium and phosphorus in building strong bones. However, a growing body of research suggests that vitamin D holds an integral part in the proper function of the immune system.

© alexskopje 123RF.com

Recent collaborative research by academics from the University of Cape Town, University of Stellenbosch and University of Pennsylvania, has shown that the supplementation of vitamin D slows down the progression of Aids in HIV-positive patients. Research also suggests that Africans are more likely than other groups of people to suffer from vitamin D deficiency.

According to Morgan Chetty, associate professor of Durban University of Technology, this research has important implications for healthcare policy makers and clinicians in Southern Africa. “The region is the worst affected in the world and widely considered the 'epicentre' of the global HIV epidemic. Based on this research, vitamin D supplementation could potentially be a relatively cost-effective way in helping to prolong the lives of HIV-positive individuals.”

Not really a vitamin

Chetty explains that vitamin D isn’t really a vitamin. “Unlike true vitamins, those micro nutrients that our bodies cannot produce, vitamin D is created when our skin is exposed to solar ultraviolet B rays.”

“Vitamin D regulates the expression of specific endogenous antimicrobial peptides in immune cells of the body. This action leads to the important part vitamin D plays in modulating the immune response to various infectious disease,” says Chetty.

While the metabolic status of the so-called vitamin is well documented under normal conditions, research by academics from the University of Cape Town, published in the journal *Cellular Immunology & Immuno-therapeutics*, suggest that viral infections such as human immunodeficiency virus (HIV) and hepatitis B virus infections (HBV) appears to hinder this natural process.

Simple cost-effective intervention

Despite the team of researchers being unable to explain how viral infections interfere with the normal metabolism of vitamin D, supplementation appears to boost white blood cell count and slow down HIV progression in infected individuals. “Providing this essential nutrient to patients may be a simple, cost-effective intervention to slow down the onset of AIDS, as well as prevent a wide range of autoimmune diseases, infections and malignancies,” says Chetty.

Reduces body’s inflammatory response

Vitamin D deficiency has been reported to be a risk factor for a number of communicable as well as non-communicable diseases such as cardiovascular disease, breast cancer and diabetes. Clinical trials in South Africa have shown that adding vitamin D supplements to the antibiotic treatment regimens for TB patients reduces inflammation in the lungs. Left untreated, inflammation of this tissue is the leading cause of death in TB patients.

Chetty explains that without compromising the efficacy of the antibiotics, high doses of vitamin D are seen to reduce the body’s inflammatory response. "This observation has led biomedical researchers to postulate the possible benefits of using vitamin D supplement in conjunction with other forms of antimicrobial therapy for pneumonia, sepsis and other lung infections. Currently, medical scientists are even investigating whether vitamin D can enhance the body’s ability to kill drug-resistant TB.”

Africans have greater risk of deficiency

He adds that seasonal decline in UVB radiation, low nutritional vitamin D intake and possible genetic variation puts Africans at greater risk of deficiency. “While melanin protects the dermis from radiation, it also competes with a special form of cholesterol for UVB, reducing the amount of light available to produce vitamin D.

“Except in the case of albinism, all people contain certain concentrations of melanocytes in the dermis of their skin. Skin pigmentation regulates the penetration of UV radiation. However, a high concentration of melanin in the African skin prevents the body from making sufficient vitamin D resulting in a deficiency, particularly in winter,” says Chetty.

People with darker skin tones also have an environment predisposition to vitamin D deficiency. “In addition, Africa has the highest burden of TB in the world. TB, especially drug-resistant TB, continues to be a massive public health concern,” he points out.

“In a country with such a high burden of TB and HIV, a simple vitamin D supplement could be an extremely effective and a cost effective weapon to include in the arsenal against illness,” concludes Chetty.