



Do HIV-positive patients need nutritional supplements?

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Introduction

Human immunodeficiency virus (HIV) is a disease that damages the body's defence system by destroying vital immune cells. As the disease progresses, immune cell levels drop until the body has virtually no defence system left. At this stage, HIV has progressed to AIDs (acquired immune deficiency syndrome) which leaves the body defenceless against various diseases (opportunistic infections).¹

Over seven million people in South Africa are living with HIV and thousands are dying from AIDs each year.² To counteract this epidemic, South Africa has implemented the largest antiretroviral therapy (ART) programme in the world, and people infected with HIV are living longer, healthier lives.^{1,2} However, medication alone may not be enough for HIV-infected individuals to maintain the level of health needed to function in everyday life. Proper nutrition and healthy lifestyle habits also promote immune function and slow the progression of HIV to AIDs. For this reason, the use of vitamin and mineral supplements may be beneficial. However, supplements should be taken cautiously as overdosing on certain vitamins and minerals may cause more harm than good.¹

Nutrient requirements

HIV-infected individuals have higher energy and nutrient requirements. Studies have shown that people require 10% more energy (kJ) after being infected with HIV and 20–50% more energy after developing an opportunistic infection. People living with HIV tend to have less fat and muscle mass than non-infected individuals and can lose weight at a rapid rate. The presence of infection, the use of certain medications

and changes in metabolism may be the reason for this. Unplanned weight-loss (especially the loss of muscle mass) has a negative effect on immunity; but can be prevented by increasing energy and protein intake. It is therefore important for HIV-infected individuals to meet their energy and protein needs. If these needs cannot be met through diet alone, supplementation may be beneficial.^{1,3}

HIV places the body under a significant amount of stress. Micronutrient (vitamin and mineral) deficiencies are a common side-effect of infection and often occur as a result of the body's inability to effectively absorb nutrients. Many micronutrients play a pivotal role in slowing the progression of HIV or preventing further health problems from developing.¹ Studies show that the use of a multivitamin supplement, containing no more than 100% of the Daily Recommended Intake (DRI), has a positive impact on the health of HIV-infected individuals.^{1,3} This includes reducing instances of HIV-related oral and gastrointestinal (GIT) complications, upper airway infections (such as bronchitis) and fatigue.³ Multivitamin supplements that would benefit HIV-infected people should include vitamins A, B₁₂, C, B-complex, D and E as well as iron, selenium and zinc.¹

Vitamins and minerals

Vitamin A is a fat-soluble vitamin found in animal products (eggs, meat and dairy) as well as in plants that contain beta-carotene (a yellow pigment present in certain fruits and vegetables).⁴ Although vitamin A is most famous for its role in maintaining healthy eye-sight, it also promotes immunity and growth. Vitamin A is central to the growth and development of white blood cells (lymphocytes) which are needed to fight infection. The body's first line of defence against infection is the skin and the mucosal layers (mucous membranes found in the nose and lungs). Vitamin A helps to maintain these layers and effectively prevents bacteria from entering the body. For this reason, adequate intake of vitamin A is imperative to promoting health and preventing illness in HIV-infected individuals. Although there is no evidence

that vitamin A slows the progression of HIV to AIDs, it does reduce instances of HIV-associated complications such as diarrhoea and pneumonia.⁵ Vitamin A should not be taken in doses higher than that of the DRI (700 and 900 µg for women and men respectively). Excess vitamin A may damage health and accelerate the progression of HIV to AIDs.¹

People with HIV are often deficient in Vitamin B₁₂.⁶ This usually occurs as a result of poor absorption in the GI tract.¹ Food sources of Vitamin B₁₂ consist of animal products such as milk and fish, as well as fortified grain products. Vitamin B₁₂ is needed for the adequate formation of red blood cells and DNA molecules, as well as for the maintenance of nerve cells. Deficiency of vitamin B₁₂ can result in various health implications which include anaemia, dementia, fatigue, loss of appetite and constipation.⁴ Studies have also shown that a deficiency in vitamin B₁₂ increases the risk of progression from HIV to AIDs.¹ HIV-infected individuals should ensure an adequate intake of vitamin B₁₂ (2.4 µg/day) either through dietary means or supplement use. It is important to note that many functions of vitamin B₁₂ require an adequate amount of folate. Consequently, it is as important to meet the DRI for folate (400 µg/day) as it is for vitamin B₁₂.⁴

The B vitamins, as well as vitamins C and D, play an important role in maintaining immune function and have been shown to slow the progression of HIV to AIDs. Vitamin D deficiency is linked to poor immune function, which is why a daily intake of 15 µg is essential for both non-infected and HIV-infected individuals.⁴ Although vitamin D can be acquired through exposure to sunlight, 'sun-loving South Africans' are not immune to vitamin D deficiency as we no longer spend significant amounts of time outdoors. Food sources of vitamin D include fatty fish, beef and egg yolks. If requirements cannot be met through diet or sun exposure, it may be necessary to take a multivitamin supplement containing the DRI for vitamin D. Another prominent nutrient in the maintenance of immune function is vitamin E. Poor immune function as a result of HIV infection increases the risk of developing conditions such as chronic heart disease, hypertension and other disorders. Due to its anti-oxidant effects, vitamin E can prevent the onset of such diseases and promote health and longevity of people living with HIV.^{1,4} The DRI for vitamin E is 15 mg/day which can be acquired through dietary means (dark leafy vegetables, nuts and whole grains) or through supplement use.⁴

Essential minerals such as iron, zinc and selenium play a major role in health and immunity. Low levels of iron are common in HIV patients due to poor absorption in the intestines.¹ Iron-deficiency can lead to anaemia, causing weakness, fatigue and poor work performance.⁴ Lack of iron increases the risk and severity of HIV-associated illnesses such as tuberculosis (TB).¹ A daily iron intake of 18 mg for pre-menopausal women, and 8 mg for men and postmenopausal women is encouraged. One of the most important nutrients in maintaining immune

health is zinc. It acts as an antioxidant and is actively involved in regulating the body's defence system.⁴ Daily zinc requirements are 8 mg and 11 mg for women and men, respectively. Zinc deficiency is linked to weakened immunity and a quicker onset of AIDs. The DRI for selenium is 55 µg and deficiency has a similar effect to that of zinc deficiency. People with HIV should make a concerted effort to reach the DRIs of all essential minerals, whether it be through diet or supplement use.

HIV causes severe damage to the immune system and increases the risk of disease

Evidence shows that taking a daily multivitamin supplement can greatly improve the health of HIV-infected individuals. The multivitamin should not contain more than 100% of the DRI of any nutrient as overdosing has potentially severe implications. Overdosing on nutrients such as vitamins A, B-complex, D, E, copper, iron, selenium and zinc can worsen the effects of HIV, compromising the immune system and making the body more susceptible to illness. It is important to note that different people have different nutrient requirements, depending on their age, gender and current state of health.¹

Conclusion

HIV causes severe damage to the immune system and increases the risk of disease. It is possible to curb the effects of HIV and slow its progression by following a healthy lifestyle and eating a nutrient-rich diet. People with HIV have higher energy and protein requirements. An adequate food intake is essential to prevent weight loss and further illness. The use of multivitamins can have a beneficial effect on maintaining the health of HIV-infected individuals by improving immunity and preventing illness.

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