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Cochrane Nursing Care Field – Cochrane Review Summary

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Micronutrient supplementation in adults with HIV infection

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Background

Over the last decade the incidence of new HIV infections has markedly declined. However, it is estimated that internationally 35 million people are still living with HIV, and in 2014 two thirds of these people were living in sub-Saharan Africa where food insecurity remains an issue (UNAIDS, 2014).

Micronutrient deficiencies are common in people with HIV (Visser et al, 2017), particularly in low income countries where diets may be low in essential vitamins and minerals. Micronutrient deficiencies may be more pronounced in people with advanced HIV as a result of reduced dietary intake, opportunistic infections, diarrhoea and parasitic infections (Visser et al, 2017).

Micronutrients are critical to immune function. Some studies conducted prior to the introduction of antiretroviral therapy (ART) suggested that micronutrient deficiencies may hasten HIV progression (Graham, 1991; Kupka, 2004). Later studies have also demonstrated an association between vitamin D deficiencies and disease progression for adults with HIV on ART (Aziz, 2013; Ross, 2011).

It is possible that vitamin and/or mineral supplementation may benefit people living with HIV by strengthening their immune system and helping them to recover from infections more quickly (Visser et al, 2017). However, a robust evidence base is needed to guide healthcare policy and practice.

Objective

The objective of this Cochrane review was to assess whether micronutrient supplements are effective and safe in reducing morbidity and mortality in people who are HIV positive.

Intervention/Methods

This review was an update of a Cochrane review published in 2010. Literature searches were therefore undertaken from January 2010 to November 2016. Randomised Controlled Trials (RCTs) were included if they compared supplements containing single, dual, or multiple micronutrients with placebo, no treatment, or other supplements. Specifically, micronutrient supplementation included vitamin A, D, E, C, B1, B2, niacin, B6, B12, K, folate, beta-carotene; and the trace elements zinc, selenium, magnesium, iron, iodine, copper, manganese, chromium, cobalt, and molybdenum. The participants in the included studies were HIV positive adults, 15

years or older, who were or were not on ART. Studies were excluded if they assessed the impact of adding micronutrients to foods or investigated the role of micronutrients in the treatment of HIV positive people with metabolic morbidity related to antiretroviral therapy.

Primary outcome measures included:

- Mortality from any cause.
- Morbidity - episodes of opportunistic infections, incidence of AIDS, hospital admissions, and other types of illnesses related to HIV infections.
- Disease progression.

Secondary outcome measures included:

- Virological response - proportion of participants who remained with an undetectable viral load and changes in HIV-RNA levels.
- Virological failure - proportion of participants who discontinued or changed to antiretroviral therapy due to virological failure.
- Immune response markers.
- Nutritional status - with measures such as body weight, body mass index, and body composition.
- Biochemical markers, including serum micronutrient concentrations.

Results

Thirty-three RCTs with 10,325 participants were included in this review. Participants in 19 of the trials participants were on ART and in 13 of the trials they were not on ART. None of the trials that used single or dual micronutrient supplements were adequately powered to determine impact on HIV related mortality or morbidity. Additionally, there were no clinically significant changes in CD4 cell (white blood cells that have an important role in immune function) count or HIV viral load identified. However, in one trial peripheral neuropathy was lower in participants with high dose supplements but this study was stopped early due to adverse events.

Conclusions

This review aimed to determine whether micronutrient supplements containing vitamins or minerals or both were effective and safe in reducing morbidity or mortality for people living with HIV, irrespective of whether they were on ART. The results were inconclusive as none of the trials were adequately powered to identify impact on mortality or morbidity.

Implications for Practice

Because a number of adults living with HIV experience micronutrient deficiencies, it is important to consider whether supplementation with vitamins and/or minerals may be a safe and effective way to reduce disease progression or number of deaths. However, because the trials included in this review were small and underpowered it was not possible to make clinical recommendations. Viser et al (2017) do note that, for people with nutritional deficiencies or whose diet does not include the recommended daily allowance of vitamins and minerals, micronutrient supplementation should not be withheld, based on the findings of this review.

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