Nutritional interventions for reducing morbidity and mortality in people with HIV

Clinical

Clinical questions

- Do macronutrient supplements, given to provide energy, protein or both; or a specific macronutrient (such as amino acids, whey protein or Spirulina) help HIV+ people live longer and more healthy lives?
- Should HIV+ people be following a specific eating plan (for example a high energy/protein diet enriched with Spirulina) in order to stay healthy and live longer?

Source: Grobler L, Siegfried N, Visser ME, Mahlungulu SSN, Volmink J. Nutritional interventions for reducing morbidity and mortality in people with HIV. Cochrane Database of Systematic Reviews 2013, Issue 2. Art. No.: CD004536. DOI:10.1002/14651858.CD004536.pub3.

Context

- Adequate nutrition is important for optimal immune and metabolic function.
- HIV+ people who are untreated (i.e. not receiving antiretroviral therapy (ART)) or treated (i.e. receiving some form of ART) are at risk of nutritional disorders. Furthermore, HIV infection is most prevalent in parts of the world where food security is compromised.
- Achieving and maintaining optimal nutrition is an important adjunct in the clinical care of HIV+ people, as good nutrition can improve an individual's immune function, limit disease-specific complications, and improve quality of life and survival.

Methods

- Eligible studies were sought using CENTRAL, MEDLINE, EMBASE, LILACS, and Gateway. Reference lists of articles were checked and authors of relevant studies and other relevant researchers were contacted for additional information.
- Standard estimates of risk ratio (RR) and 95% confidence intervals (CI) were calculated for dichotomous outcomes. Mean differences (MD) and 95% CI were estimated for continuous outcomes.
- Similar studies were combined if it was clinically meaningful to do so, with the random effects model using for meta-analyses.

PICO(S) to assess eligible studies

- **Participants:** Adults and children with HIV/AIDS, excluding HIV+ pregnant women. People with TB/HIV co-infection were included if their randomisation had been stratified by HIV infection status.
- **Intervention:** Dietary interventions to provide additional protein, energy or both, and interventions providing 1g or more of a specific macronutrient element. Interventions had to be oral and given for 4 weeks or longer.
- **Comparison:** Usual diet, dietary counselling or placebo.
- **Primary outcomes:** All-cause mortality, mortality related to HIV infection and other HIV-related conditions and morbidity.
- **Studies:** Randomized trials.

Description of eligible studies

- 14 trials (1725 adults, 271 children) in the out-patient setting, differing in stage of HIV, treatment status and nutrient status.
- 7 studies were from high-income countries: USA (4), Switzerland (2) and Germany (1); 4 studies from Africa (South Africa, Kenya, Burkina Faso and Central African Republic), 1 from Brazil and 1 from India. Location is unclear for the other.
- Each trial evaluated a different supplement, apart from 2 (1 in adults, and 1 in children) of Spirulina.
- 3 trials reported mortality. Other outcomes included body weight and composition, viral load, CD4 count, energy intake and quality of life.
- No trials were graded as providing strong evidence.

Results - Mortality

- Only 3 trials reported on deaths (2 in adults, 1 in children).
- Supplementary food (1 trial) and daily supplement of Spirulina (1 trial) did not significantly alter the risk of death compared with no supplement or placebo in malnourished, ART naive adults.
- A nutritional supplement enhanced with protein did not significantly alter the risk of death in HIV+ children with prolonged diarrhoea , compared to standard nutritional care (1 trial).

Results – Other outcomes

- Supplementation with macronutrient formulas to provide protein, energy or both and fortified with micronutrients, in conjunction with nutrition counselling, significantly improved **energy intake** (3 trials; n=131; MD 394 kcal/day; 95% CI: 225 to 562; p<0.00001) and **protein intake** (2 trials; n=81; MD 23.5 g/day; 95% CI: 12.7 to 34.0; p<0.00001) compared with no nutritional supplementation or nutrition counselling alone in adults with weight loss.
- In general, supplementation with specific macronutrients such as amino acids, whey protein concentration or Spirulina did not significantly alter clinical, anthropometric or immunological outcomes in HIV-infected adults and children.

Conclusions for practice

- In keeping with WHO recommendations, everything possible should be done to promote and support adequate dietary intake and food security, while recognising that this may not be sufficient to correct specific deficiencies in all HIV-infected individuals.
- There is low quality evidence that provision of a balanced macronutrient supplement, fortified with micronutrients, increases the daily energy and protein intake when compared to nutritional counselling alone.
- The choice of supplement is likely to be determined by cost and availability.

Conclusions for research

- Adequately powered studies are needed to determine the efficacy, safety and cost-effectiveness of macronutrient supplements in HIV+ adults and children.
- Choice of supplements for future research should be guided by the evidence-base and focus on determining the optimal composition and dosage of balanced macronutrient supplements fortified with micronutrients, and fortified food supplementation delivered by food programmes.
- Research participants should be diverse with respect to stage of disease, use of antiretroviral therapy, immune status, and nutritional status.

Useful links

- Cochrane Journal Club discussion points

- Nutritional interventions for reducing morbidity and mortality in people with HIV