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A Nutritional Approach to Mitigate HIV Viral Load: dietary assessment tools

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Abstract

Malnutrition and HIV both have biological consequences that weaken the immune system by reducing CD4 T cells, suppressing delayed hypersensitivity, and inducing irregular B-cell responses. Therefore, it is critical to have good nutritriotion intake to slow the progression of HIV/AIDS and reduce sickness. This poster highlights some of the best dietary assessment tools that have shown to be beneficial in treating people who are HIV-infected and malnourished.

Methods

1. The **individual dietary diversity questionnaire** is an efficient, user-friendly, and inexpensive assessment tool. Participants get one point for eating something from each of the 12 food group options, or 0 points otherwise. Following that, the food scores are divided into tertiles: low IDDS (1-3 food groups), medium IDDS (4-5 food groups), and high IDDS (6 or more food groups).

2. Biochemical, body composition, and nutritional information were assessed in adult male individuals (n = 348) who were HIV-positive and had a BMI of less than 20.5. On 41 identified food groups collected from **3-d food records**, cluster analysis was done. Comparing dietary clusters for sociodemographic characteristics, nutritional consumption, and clinical outcomes. The correlations between dietary clusters and changes in BMI, CD4 count, and VL were examined using multivariate linear regression.

3. A cross-sectional study of 202 HIV+ adults, the **AHEI** (scored on the basis of intake of 8 components: vegetables, fruit, nuts and soy, white or red meat, polyunsaturated or saturated fat, fiber, multivitamin use, and alcohol) was applied to 24-hour recalls. Regression analyses assessed the relationship between AHEI score and nutritional and immunological biomarkers collected simultaneously.

4. For three months, sixty-three impoverished AIDS people were given cotrimoxazole as usual and 500 g of locally produced **RUTF**. At admission and on a monthly basis, the following variables were measured: height, weight, MUAC, Karnofsky score, and morbidity. Each month, the acceptability and volume of RUTF ingestion were evaluated.

5. The **nutritional screening** and nutritional assessment both resulted in participants being assigned to one of three nutritional statuses: 'low risk', 'at risk' and 'high risk'. The association between the nutritional screening and nutritional assessment was measured.

IDDS — measures nutrient sufficiency of a person's diet

RNS-H — a tool for screening nutritional status over a one-week period

Best Dietary Tools for HIV/AIDS patients

3-d food records — accesses dietary patterns identified by cluster analysis and change in body mass index (BMI; in kg/m 2), CD4 count, and viral load (VL)

Ready to Use Therapeutic Food (RUTF) — a food product high in energy and micronutrients in which all powdered ingredients are suspended in fat and do not need to be prepared or mixed with water before consumption

A low Alternative Healthy Eating Index (AHEI) — Predicts risk of HIV progression by examining the relationship between AHEI, nutritional status, and dietary intake in HIV+ adults

Results

1. The mean micronutrient density of complementary foods and the micronutrient adequacy of the diet in adults have both been positively correlated with **dietary diversity scores**.

2. Three eating patterns were identified: fruit, vegetables, and low-fat dairy; fast food and fruit drinks; and juice and soda. The subjects that followed the fast food and fruit drink pattern consumed the least fiber, had the highest VL and CD4 counts. The subjects with the highest protein, fiber, and micronutrient intakes as well as the highest BMI and CD4 count were those following the fruit, vegetable, and low-fat dairy diet pattern. The subjects who followed the juice and soda pattern consumed more calories and had the lowest BMI. In a multivariate model, the fast food and fruit drink cluster and the fruit, vegetable, and low-fat dairy cluster, respectively, gained 0.33 (P = 0.06) and 0.42 (P = 0.02) more BMI throughout the course of the research period than the juice and soda cluster.

3. The **AHEI** score was significantly inversely related to viral load (β=−1.023, p=0.0108), and directly to body cell mass (β=0.06, p=0.03), serum albumin (β=1.82, p=0.03), hemoglobin (β=0.50, p=0.045), iron intake (β=0.12, p=0.0002) and adequate caloric intake using the Harris-Benedict formula (β=0.001, p=0.003). The models were controlled for BMI, age and education.

4. Weight, BMI, and MUAC increased overall by 73.3% (44/60). After three months, the median weight, MUAC, and BMI gains were 3.0 kg, 25.4 mm, and 1.1 kg/m2, respectively. The intervention enhanced participants' physical activity performance, and 78.3% (47/60) recovered enough strength to walk to the closest medical institution. At three months, mortality was 18.3% (11/60).

5. A total of 51 patients participated. A high prevalence of nutritional risk based on the RNS-S (54.9%) was found with 33.3% of the sample being malnourished. The most common nutrition-related complications were food insecurity, poor appetite, weight loss and diarrhoea.

Citations

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