

# Adherence to nutritional counseling in hiv-positive patients: a case report

## *Adesão ao aconselhamento nutricional em pacientes soropositivos HIV-1: relato de caso*

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### ABSTRACT

As a strategy for the prevention of symptoms and control of signals in patients with the Human Immunodeficiency Virus (HIV), the nutritional monitoring features a supporting role to drug treatment. This study aimed to report the clinical case of an HIV-1 carrier with the evaluation of nutritional counseling. A decrease in anthropometric measurements was observed (17.2% in weight, 11% in waist circumference, and 11% in arm circumference). The replacement of foods that are source of simple sugars with fruits and vegetables, decreased intake of carbohydrates in 31.7%, control of liver enzymes (glutamic oxaloacetic transaminase and glutamic pyruvic transaminase), and bilirubin balance has led to the disappearance of scleral conjunctiva jaundice. Frequency to consultations and maintenance of medications (antiretroviral therapy) were also observed. These results reinforce the importance of a nutritional approach in the treatment of Aids.

**Key words:** Nutrition Therapy; Medication Adherence; Acquired Immunodeficiency Syndrome/therapy; Acquired Immunodeficiency Syndrome/diet therapy; HIV.

### RESUMO

*Como estratégia de prevenção de sintomas e controle de sinais em portadores do vírus da imunodeficiência humana (HIV), o acompanhamento nutricional possui papel coadjuvante no tratamento medicamentoso. Este estudo objetivou relatar o caso clínico de portador de HIV-1 em que o aconselhamento nutricional foi avaliado. Observou-se diminuição de medidas antropométricas (17,2% de peso, 11% de circunferência da cintura e 11% de circunferência do braço). A substituição de alimentos fonte de açúcares simples por frutas e verduras, diminuição da ingestão de carboidratos em 31,7%, controle de enzimas hepáticas (transaminase glutâmico oxalacética e transaminase glutâmico pirúvica) e equilíbrio de bilirrubina levou ao desaparecimento da icterícia na conjuntiva escleral. Verificaram-se também assiduidade nas consultas e manutenção da medicação (terapia antirretroviral). Esses resultados reforçam a importância da abordagem nutricional no tratamento da AIDS.*

**Palavras-chave:** Terapia Nutricional; Síndrome de Imunodeficiência Adquirida/terapia; Síndrome de Imunodeficiência Adquirida/dietoterapia; Adesão à Medicação; HIV.

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### INTRODUCTION

The human immunodeficiency virus (HIV) affects approximately 34.2 million people worldwide<sup>1</sup> and its incidence rate ranged from 14:1 to 1.68:1 male to female infections in the last 30 years.<sup>2-4</sup>

Mortality from HIV infection has decreased in recent years due to the evolution of the anti-retroviral therapy (HAART).<sup>5</sup> However, this therapy has been associated with metabolic adverse events characterized by dyslipidemia, alterations in body composition (lipodystrophy), insulin resistance/glucose intolerance, and hypertension.<sup>6,7</sup> The condition of living with HIV or the acquired immunodeficiency syndrome (AIDS) took on characteristics that are similar to other chronic non-transmissible diseases, requiring changes in life style and pharmacologic management for the prevention of cardiovascular events, among others.

Nutritional interventions and/or nutritional counseling should be part of the control and treatment of HIV/AIDS because diet and nutrition can improve adherence and effectiveness of the anti-retroviral therapy and contribute to improving metabolic alterations.<sup>8,9</sup> The main objectives linked to diet and therapy in patients with HIV/AIDS are to prevent malnutrition, preserve lean body mass, reduce complications and symptoms from opportunistic infections, reduce side effects of drugs that interfere with the ingestion and absorption of nutrients, and improve the quality of life of these patients.<sup>10,11</sup> However, there is no consensus on the effect of nutritional counseling or nutritional therapy in people with HIV/AIDS under HAART.<sup>12-15</sup>

The rate of withdrawal from HIV/AIDS treatment reaches 30 to 35%.<sup>16,17</sup> Several factors are linked to low adherence to drug and diet-therapy treatments especially lack of motivation and family support, loneliness, depression, and ignorance about the beneficial effects of treatment in relation to disease progression.<sup>15</sup>

New nutritional care strategies should be developed to promote the prevention of relapses and acquisition of skills to resolve problems related to food, which are important conditions when facing life with HIV/AIDS.<sup>13-15</sup>

The aim of this study was to report a clinical case of an HIV-1 carrier in which the nutritional counseling has been evaluated.

## CASE REPORT

MLP, female, 55 years old, had been followed up since 2005 at the Infectious Diseases Service of the Basic Health Unit for infection with the human immunodeficiency virus (HIV-1). She was referred to the Nutrition Service with a diagnosis of obesity, waist circumference characterized by abdominal lipodystrophy, dyslipidemia and controlled hypothyroidism, polydipsia, acute diarrhea, candidiasis, herpes labialis, and hipoguesia.

The patient was in continuous use of levothyroxine, atazanavir, ritonavir, zidovudine, and lamivudine.

In the first consultation, her weight was 85.1 kg and her body mass index (BMI) was grade I in the classification of obesity; in the last consultation her weight was 70.4 kg and BMI was 28.0 kg/m<sup>2</sup>. Table 1 describes the anthropometrical variables measured during the consultations: weight, BMI, waist circumference (CC), and arm circumference (CB). She is a widow, born in Belo Horizonte (MG), and denied sexual activity since the death of the spouse five years ago. She worked as an auxiliary janitor and selling candies, and lived with five more people in a rented house with basic sanitation. She denied smoking and alcoholism; her mother presents hypertensive cardiovascular systemic disease without other family diseases. She reported daily consumption of coffee, candies, red meats, dairy products, vegetables/legumes, fruits/juices, and vegetable oil, pasta, cereals, breads, and cookies three times a week. She consumed saccharin and cyclamate sodium based sweeteners. Her HIV-1 viral load was undetectable, with T CD4 + lymphocyte count of 202 cells/mm<sup>3</sup>, T CD8+ of 498 cells/mm,<sup>3</sup> and T CD4 +/CD8+ of 0.25.

She maintained assiduity at monthly nutritional consultations after six months of follow-up. The assiduity analysis is one of the methods to evaluate adherence to nutritional outpatient follow-up.<sup>16</sup>

The evaluation of adherence to nutritional follow up through indicative nutritional parameters showed reduction in anthropometric measures, 17.2% of weight (14.7 kg), 11% in CC (11.5 cm), and 11% in CB (4 cm) (Table 1).

**Table 1** - Description of anthropometrical variables in HIV-positive patient assisted in an outpatient care, Belo Horizonte, Minas Gerais, Brazil

Appointment date	Weight	BMI	CC	CB
	kg	kg/m <sup>2</sup>	cm	cm
2008/06/03	85.1	34.5	*	*
2008/08/13	81.9	32.5	104.5	35
2008/09/12	81.4	32.7	107	33
2010/10/14	70.5	28.3	95	29
2010/11/17	70.4	29.3	93	31
2010/12/14	70.4	28.2	93	31

BMI – body mass index in pounds per square meter; CC – waist circumference in centimeters; CB – arm circumference in centimeters; \* not applied.

The patient's carbohydrate intake decreased in 31.7% and a replacement of simple sugars by fruit and vegetables was recorded after nutritional counseling and the aid of the 24 hours feeding recall (Table 2).

**Table 2** - Description of dietary variables in HIV-positive patient assisted in an outpatient care, Belo Horizonte, Minas Gerais, Brazil

Date	CHO (kcal)	CHO (g)	PTN (kcal)	PTN (g)	LIP (kcal)	LIP (g)	VCT
2008/06/03	1048.38	262.1	120.25	30.06	214.85	23.87	1381
2008/08/13	503.5	125.88	122.36	30.59	140.69	15.63	765
2008/09/12	992.04	248.01	80.28	20.07	141.88	15.76	1214
2010/10/13	779.81	194.95	212.35	53.09	735.94	81.77	1728
2010/11/17	520.1	130.03	172.86	43.22	287.95	31.99	982
2010/12/14	715.9	178.98	256.05	64.01	588.84	65.43	1560

CHO-Carbohydrate; PTN-Protein; LIP-Lipid; G. trans fat; g-gram; kcal-kilocalories provided; VCT-total caloric value.

The laboratory variables showed increase in LT CD4+ of 456 cells/mm<sup>3</sup> (25.74%) and maintained control of viral load; reduction in values of liver enzymes (transaminases), especially glutamic oxaloacetic aminotransferase (TGO)/pyruvic glutamic transaminase (GPT) (initially as 4.7 and final as 2.7, 55.3% reduction); and reduction in the values of direct, indirect, and total bilirubin (initially as 4.2 mg/dL and final as 1.2 mg/dL). Nutritional counseling directed towards reduced consumption of saturated and trans fats, with emphasis on the consumption of dark green vegetables and monounsaturated fats, was associated with the reduction of bilirubin values to normal levels and disappearance of jaundice. In the subsequent consultation, the patient appeared more motivated by the reduction of jaundice in the scleral conjunctiva and skin without the need to modify her HAART treatment to which she was already well adapted to.

## DISCUSSION

The patient's attendance to all scheduled consultations with the nutrition team allows inferring about adherence to nutritional therapy; the patient's friendly behavior regarding the correct use of medicines and adherence to nutritional guidelines was observed on the basis of favorable anthropometric and biochemical effects.<sup>3</sup> This fact is equally or more important in HIV/AIDS patients because the incorrect use of HAART is directly related to therapeutic failure facilitating the emergence of drug-resistant HIV strains.<sup>16</sup>

Regardless of the long follow-up time and low socio-economic profile, the adhesion took place possibly because of the interest in maintaining the use of the same drugs. Previous alterations in biochemical results and side effects from the prescribed medication could be exacerbated and had led to changes suggested by the medical staff.<sup>3, 13, 14</sup> This result high-

lights the importance of a joint interdisciplinary and inter-sectorial work<sup>1,2,17-20</sup> with amazing results<sup>19,20</sup> even in the face of the complexity of health care for HIV carriers. There are few studies analyzing anthropometric measurements<sup>13,21</sup> in persons with HIV/AIDS receiving HAART. These patients show the tendency to gain weight and associated metabolic changes are observed after the beginning of therapy. However, reduction in weight and BMI were observed in this report.

Table 2 shows that a decreased intake of carbohydrates and increased consumption of energetic, lipidic, and proteic foods occurred. These data resulted from a balanced diet in which the consumption of foods that are sources of monounsaturated lipids was advised to the patient (omega 3, omega 6, and omega 9) because these are anti-inflammatory nutrients as opposed to those that are sources of saturated lipids, previously ingested. Better intake and caloric distribution were prescribed regarding protein foods with the purpose of contributing to the production of lymphocytes, cytokines, and enzymes. The decreased intake of carbohydrates was based on the metabolism of this macronutrient, evidencing that remnants of sugar could possibly be stored as triglycerides in the patient's body.

There is a relationship<sup>14,22-27</sup> between the atherogenic potential of foods and dyslipidemias observed early among patients using HAART, which can increase triglycerides and LDL. The importance of treatment of these lipid disorders became evident with the increasing life expectancy and reports of cardiovascular complications.<sup>28</sup> A state of insulin resistance can also occur especially in patients with lipodystrophy, hypertriglyceridemia, and low levels of HDL,<sup>7,29</sup> demonstrating that diet control and nutritional counseling are fundamental requirements for the treatment. Interventions and nutritional counseling<sup>13</sup> in HIV/AIDS can improve defenses against infection, promote recovery and treatment adherence, and improve the patients' quality of life.

**Table 3** - Description of the count of oxalic and pyruvic transaminases and bilirubin in HIV-positive patient assisted in an outpatient care. Belo Horizonte. Minas Gerais. Brazil

Moments of nutritional counseling	TGO (U/L)	TGP (U/L)	TGO/TGP (U/L)	Direct Bilirubin (mg/dL)	Indirect Bilirubin (mg/dL)	Total Bilirubin (mg/dL)
Previous (2008)	19	4	4.75	0.8	3.4	4.2
During (2009)	22	6	3.66	0.5	2.6	3.1
Final (2010)	24	9	2.66	0.4	0.8	1.2

TGO – oxaloacetic transaminase; TGP – pyruvic transaminase.

A reduction in scleral conjunctiva jaundice and biochemical values was observed. The most frequent laboratory alterations<sup>30</sup> associated with the use and concentration of atazanavir are jaundice, nausea, and diarrhea. The most frequent laboratory alterations include indirect hyperbilirubinemia (grade 3 or 4) in 37% of patients (6% with grade 4) and elevation of the TGO and TGP liver enzymes when treatment discontinuation is recommended.<sup>31,32</sup>

Viral load and elevated lymphocyte counts are indicators of good efficacy related to treatment adherence.<sup>28,33</sup> In this report, a special attention in relation to medicines was required because there was an increase of lymphocyte CD4 values and improvement with regard to fasting instructions linked to the use of drugs after beginning the of nutritional monitoring.

Despite the clinical and nutritional support, favorable clinical results in treatment and minimization of presented symptoms require research in the area and government support with the goal to improve the patients' adherence to treatment. The non-adherence to nutritional counseling, therefore, represents a challenge and threat to individual and public health.<sup>34,35</sup>

In this report, the importance of a nutritional approach to treating HIV/AIDS patients is noted as a contribution to real improvement in the quality of life of these individuals.

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