

## Food insecurity of HIV/AIDS patients at a unit of outpatient healthcare system in Brasilia, Federal District, Brazil

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### ABSTRACT

**Introduction:** Food security remains to be one of the world's biggest problems and is found to be related to HIV/AIDS. The objective was to examine food insecurity in HIV/AIDS patients from Brasilia, Brazil. **Methods:** Short version of the Food Security Scale was applied to patients with HIV/AIDS. **Results:** A total of 103 patients participated (65 HIV+ and 38 with AIDS). Food insecurity was found in 33.8% of HIV+ patients and 36.8% of patients with AIDS. A relation between food insecurity and low educational and social levels was established. **Conclusions:** Food security should be an important component in HIV/AIDS treatment programs.

**Keywords:** Acquired immunodeficiency syndrome. Hunger. Public health nutrition.

Food security refers to the regular and permanent access of an individual to quality food in sufficient quantity, without compromising access to other essential needs. Its absence, food insecurity, has been recognized as one of the world population's biggest problems, either through lack of food and living conditions that prevent the adequate utilization of available food<sup>1</sup>. In Brazil, according to the National Survey by Household Sample (PNAD) on food security, more than 30% of households located in urban areas live in a situation of food insecurity<sup>2</sup>.

Diseases that decrease the ability to work are closely related to food insecurity, especially in developing countries, creating a vicious cycle that increases the vulnerability of individuals and worsens the severity of the disease. One of these serious diseases related to food insecurity is acquired immunodeficiency syndrome (AIDS)<sup>3</sup>.

According to the United Nations Program on HIV/AIDS (UNAIDS)<sup>4</sup>, the number of people living with HIV reached 33.4 million in 2008, and the number of AIDS-related deaths hit 3 million, so this disease remains a high healthcare priority. Among individuals with this disease, food insecurity is associated with decreased adherence to treatment, low cluster of differentiation (CD4) cell counts, increased viral load, incomplete suppression of HIV, an increase in opportunistic infections, and decreased survival rates of individuals<sup>5-6</sup>.

Despite the guidelines from international organizations to integrate HIV and nutrition programs, the effective implementation of such programs depends on database development and information management<sup>7</sup>. This requires knowing the situation of food insecurity in relation to this disease and the mechanisms that lead to it. In Brazil, there are few studies that seek to monitor the nutritional status of families<sup>8</sup>. Scarcer data are seen with regard to AIDS-related food insecurity. Thus, this study was undertaken to verify the presence of this condition in patients with this disease.

As a descriptive cross-sectional study, the survey involved HIV/AIDS patients undergoing outpatient treatment at the public

healthcare system in The Federal District (DF) of Brazil. The Federal District is the unit of the Brazilian federation with the highest human development index (HDI) (0.849) and *per capita* income in the country (R\$6,473). The survey was conducted at a unit of outpatient healthcare system in the Federal District, specializing in the treatment of AIDS patients. It is located near the central city of Brasilia-DF, where the easy access of transportation (private and public) makes the unit a frequented place by residents of different regions of the Federal District. The number of patients was not predetermined, and all those who agreed to participate in the survey answered a questionnaire administered between September and November 2010.

The questionnaire was divided into three parts. First, there were questions aiming to characterize the participants with regard to age, gender, marital status, social and economic status (according to criteria of the Brazilian Studies and Research Association - ABEP), number of residents per household, and participants' work activity and educational level. Thereafter, questions checked clinical features such as CD4 cell count, viral load, and medication being used.

In the third stage of the study, the food insecurity check included questions (Portuguese version)<sup>9</sup> from the short version of the Food Security Scale<sup>9</sup>. This assessment tool is suitable in the diagnosis of food security conditions and identification of populations at highest risk of insecurity and also for the observation of the impact of public policies on the population's access to adequate food.

The short form of the scale has six questions. Has the food ever run out in your home and you didn't have the money to buy more? Can you afford to buy your family balanced meals that include rice, beans, meat, salads, and fruit? Did you or someone else in your home have to ever cut the size of your meals or skip meals because there wasn't enough money for food? How often did this happen: almost every month, some months but not every month, or in only 1 or 2 months? Have you ever eaten less than you felt you should because there wasn't enough money for food? Have you ever been hungry but didn't eat because there wasn't enough money for food? These questions generate a score ranging from 0 to 6. In four questions, each positive answer corresponds to a point, while in one of the questions the point was given to a negative answer, while in another, the score corresponds to the time of exposure when there was a decrease in

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**Received in** 05/01/2011

**Accepted in** 07/02/2011

the amount of food for lack of money. A period above or equal to three months was equivalent to 1. Based on this questionnaire, patients with scores 0-1 were defined as food secure (SEG), those whose scores were between 2-4 were categorized as insecure without hunger (INS), and patients who had scores 5-6 in their answers were insecure with hunger (IWH)<sup>8</sup>.

To check the differences between patients classified as SEG, INS, and IWH in relation to social-economic and clinic parameters, the Chi-square test or analysis of variance (ANOVA) were performed, whenever indicated. All participants signed an informed consent form, and this study was authorized by the Committee for Research Ethics of the Foundation for Health Science Education and Research (FEPECS) of the Government of the Federal District.

Of the 150 patients invited to participate, 103 participated in the survey. The food security and clinical conditions of 103 patients (65 HIV+ and 38 with AIDS), with an average of 42.6 years of age, were analyzed. Of the total HIV+ patients, 43 (66.2%) were food secure 12 (18.5%) were insecure without hunger, and 10 (15.4%) were insecure with hunger. Of the AIDS patients, 24 (63.2%) were food secure, 7 (18.4%) were insecure without hunger, and 7 (18.4%) were insecure with hunger (IWH) (**Table 1**).

Only 27.2% of patients had a higher educational level, while 43.7% had a secondary education degree, and 29.1% had primary education only. Individuals from lower social classes (D and E) represented over 73% of patients, while social classes B and C represented only 27%. No individual from class A took part in this study. Of the IWH individuals, 70.6% belonged to social class E. In the same social class, 63.1% were INS individuals.

Most (63.3%) patients were employed, while 18.4% were retired or had no regular job. Even retired patients and those with jobs had an overall prevalence of 23.3% of food insecurity, with or without hunger. There were three residents per household on average, but the range went from one to nine.

CD4 cell count above 500cells/mm<sup>3</sup> was observed in most (64.1%) of the patients, and only 35.9% were below this value. With respect to viral load, most (55.4%) of the subjects had values above 500copies/ml. The antiretroviral drugs commonly used by patients were: lamivudine (52.4%), efavirenz (38.8%), tenofovir (30.1%), and zidovudine (19.4%).

Analysis of patients classified as SEG, INS, and IWH showed differences that were not statistically significant ( $p>0.05$ ) for clinical condition, age, sex, occupation, marital status, viral load and medication. The analysis showed statistically significant differences ( $p<0.05$ ) between patients regarding educational level, social class and

**TABLE 1 - Food security and insecurity data of HIV/AIDS patients.**

Data of patients	SEG (n=67)		INS (n=19)		IWH (n=17)		Total (n=103)		p
	n	%	n	%	n	%	n	%	
<b>Clinical condition</b>									
HIV	43	64.1	12	63.1	10	59.8	65	66.0	0.91
AIDS	24	35.9	7	26.9	7	41.2	38	34.0	
Age (years)	42.9±11.3		44.0±8.5		41.1±6.8		42.6±10.1		0.73
<b>Sex</b>									
male	50	74.6	12	63.1	14	82.3	76	73.7	0.41
female	17	25.4	7	26.9	3	17.7	27	26.3	
<b>Education</b>									
fundamental	16	23.8	7	26.9	7	41.1	30	29.1	
medium	26	38.9	10	52.6	9	52.9	45	43.7	0.03
superior	25	37.3	2	10.5	1	6.0	28	27.2	
<b>Social class*</b>									
B	6	8.9	—	—	6	5.8			
C	18	26.8	1	5.4	2	11.7	20	19.4	0.01
D	23	34.3	6	31.5	3	17.6	34	33.0	
E	20	29.8	12	63.1	12	70.7	44	42.8	
<b>Occupation</b>									
regular job	48	71.6	8	42.1	9	52.9	65	63.2	
retired	12	17.9	4	21.0	3	17.6	19	18.4	0.05
no regular job	7	10.5	7	26.9	5	39.5	19	18.4	
<b>Marital status</b>									
married/stable union	32	47.7	9	47.4	8	47.0	46	44.6	0.99
single	35	52.3	10	52.6	9	53.0	57	55.4	
<b>TCD4 cells</b>									
> 500	52	77.6	11	58.0	3	17.6	66	64.0	
500-200	7	10.5	6	31.5	12	70.7	25	24.2	0.001
< 200	8	11.9	2	10.5	2	11.7	12	11.8	
<b>Viral load</b>									
< 500	32	47.7	9	47.5	5	29.4	46	44.6	
500-10,000	22	32.8	6	31.5	6	35.3	34	33.0	0.61
>10,000	13	19.5	4	21.0	6	35.3	23	22.4	
<b>Medication</b>									
lamivudine	33	49.2	11	58.0	8	47.0	54	52.4	
efavirenz	29	43.3	3	15.8	8	47.0	40	38.8	0.61
tenofovir	20	29.8	6	31.5	5	29.4	31	30.1	
zidovudine	11	16.4	5	26.3	4	23.5	20	19.4	

SEG: food security; INS: insecurity without hunger; IWH: insecurity with hunger. \*Social class: according to criteria of the Brazilian Studies and Research Association (ABEP).

TCD4 cells count. As compared to the INS and IWH groups, patients in the food security group had higher education, ranked higher in the social class strata and had higher levels of TCD4 cells.

In 2004, according to the PNAD, the presence of food insecurity in the population of the Federal District was below 25%<sup>2</sup>. In this study, in 2010, it was observed that 35% of HIV patients suffered from food insecurity, with or without hunger. This prevalence was three times higher than that recorded by Santos et al.<sup>9</sup> in the urban population of the City of Pelotas, State of Rio Grande do Sul, Brasil (11%), with an HDI (0.816) and per capita income (R\$4,328.25) slightly lower than the ones in the Federal District, using the same assessment questionnaire.

The differing situations of food insecurity in Brazilian regions are well established. In the Southern region, 75% of households have secured access to food, while in the North and Northeast, this occurred in approximately 50% of households<sup>2</sup>. It is a known fact that there is an increasing trend of AIDS cases among the lower-income populations. Thus, data obtained from food insecurity in this survey may be even lower than those found in other regions that have lower levels of human development and lower income *per capita*. Subsequent studies in different regions are needed to verify this condition.

The relationship among nutrition, financial situation and HIV infection, increased opportunistic infections, and progressive worsening of the disease is well known. The present study verified a higher number of individuals with food insecurity belonging to social class E. There was also increased food insecurity in patients with lower educational levels (elementary and secondary) compared with individuals with a higher social standing. The link among insecurity, educational level, and social and economic status was also noted in other studies<sup>8</sup>.

Zidovudine, efavirenz, tenofovir, and lamivudine (the drugs most commonly used by patients who participated in this study) have side effects that include anorexia, nausea, vomiting, and diarrhea. The worsening of side effects due to food insecurity leads to the deterioration of the patient's nutritional condition and decreases adherence to the treatment, leading to further progression of the disease<sup>10</sup>, increased resistance to antiretroviral therapy<sup>11</sup>, and increased costs of medical care to these patients<sup>12</sup>. Thus, food insecurity in HIV patients has deleterious effects not only to the patients but also to the healthcare system, by increasing its costs.

In Brazil, the annual cost of antiretroviral therapy was R\$6,124 per patient in 2005. In that same year, the spending on antiretrovirals in the budget of the HIV/AIDS Program reached 68.4%, representing 2.7% of the total amount spent on health<sup>13</sup>. Considering that in the Federal District the monthly cost of an essential food basket is R\$45.00, and the annual spending on food per patient with food insecurity would be R\$540.00, which represents less than 10% of the spending on antiretroviral therapy. Government action has ensured that all HIV patients have access to antiretroviral medications. However, some characteristics seen in most patients with this disease, such as poverty, lower educational level, difficulty to get a job, prejudice, and even physical disability for work, may increase the risk of food insecurity.

The World Health Organization, UNAIDS, and the World Food Program have recommended the integration of food assistance with HIV/AIDS programs<sup>14</sup>. Nutritional intervention, leading to food security of patients receiving antiretroviral therapy, has increased medication adherence, fewer side effects, weight gain, and recovery of physical and work strength of the patients and their families<sup>15</sup>.

The serious consequences of food insecurity in relation to HIV/AIDS reported in several studies and their prevalence observed in this study indicate that food security should be an important component of HIV/AIDS treatment programs in Brazil.

## ABSTRACT IN PORTUGUESE

### Insegurança alimentar de pacientes com HIV/AIDS atendidos em uma unidade ambulatorial do sistema de saúde em Brasília, Distrito Federal, Brasil

**Introdução:** Insegurança alimentar é um dos maiores problemas da população mundial e a AIDS está intimamente relacionada a esta condição. O objetivo

foi verificar insegurança alimentar em pacientes adultos com HIV/AIDS em Brasília, Brasil. **Métodos:** Foi aplicada a versão curta da Escala de Segurança Alimentar a pacientes com HIV/AIDS. **Resultados:** Participaram 103 pacientes (65 HIV+ e 38 com AIDS). Insegurança alimentar foi verificada em 33,8% dos pacientes HIV+ e 36,8% dos pacientes com AIDS. Foi observada relação entre insegurança alimentar e baixo nível educacional e social. **Conclusões:** Segurança alimentar deve ser parte importante nos programas de HIV/AIDS.

**Palavras-chaves:** Síndrome de imunodeficiência adquirida. Fome. Nutrição em saúde pública.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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