



## Food Security Among HIV-infected Rural Kenyan Women

Grace Keverenge-Etyang, Moi University; Charlotte Neumann, UCLA;  
and Judith Ernst, Indiana University

HIV Nutrition Project (HNP)

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*Food insecurity limits capacity to meet the specific nutritional needs of HIV/AIDS affected people. HIV infection itself undermines food security and nutrition by reducing work capacity and productivity and jeopardizing household livelihoods. The HIV Nutrition Project's (HNP) food intervention study funded by the GL-CRSP through USAID has the improvement of household food security through an increased intake of animal source foods as one of the core objectives. In addition to health and nutritional status assessment, the proxy measures being used by HNP to capture changes in a household's ability to access food over time include the Household Food Insecurity Access Scale (HFIAS) with a range of 0-27, the Household Dietary Diversity Score (HDDS) with a range of 0-12, and the Months of Adequate Household Food Provisioning (MAHFP) score with a range of 0-12. Of the 104 HIV-infected drug naïve women enrolled in the study thus far, 49% live on less than USD 1.00 per day and spend less than USD 5.00 per year for purchases of medicine. Preliminary findings show that at baseline, their mean (SD) age, CD4 cell count, Hemoglobin (Hb), and Body Mass Index (BMI) were 34.8 (7.0), 502 (212), 12.4 (1.6), and 22.4 (3.7), respectively. The HFIAS score (SD) of 7 (2.4) and a 42.7% prevalence of severe food insecurity reflected household worry due to inadequate food, and the consumption of fewer or small meals. The MAHFP score (SD) was 5.24 (2.7) with majority of the households having limited access to food during the months of July (74%), August (83%), and September (72%). The HDDS (SD) of 6.10 (1.9) suggests a prevalence of low food diversity in diets. With the exception of milk, which is mostly consumed in tea, there was very minimal consumption of animal source foods. The scores for these proxy measures of household food insecurity indicate that though the current CD4 counts and Body Mass Indices (BMI) of the study population are within the normal range, their habitual diets are likely to be poor due to the high prevalence of food insecurity.*

### Background

Household food security involves the availability, reliable access and appropriate use of nutritious food within the home, and is considered essential for keeping people living with HIV as healthy as possible and for as long as possible. At the UN General Assembly of 2006, all member states in attendance resolved that access to sufficient, safe, and nutritious food to meet dietary needs and food preferences for an active healthy life should be part of any comprehensive response to HIV/AIDS. In the context of HIV, food availability tends to be impaired by production failures related to labor constraints, gender inequality in land tenure, and loss of productive assets needed to sustain household food production. Limited access to food may occur if affected households and infected individuals are too ill or overburdened to produce or earn money to buy food. Coping strategies in the face of persistent hunger with particularly negative consequences include eating less or substituting less nutritious foods, selling assets, and using savings and investments to pay for basic needs and medical care. Though immediate needs are met, the affected household's ability to maintain food security over the long term is jeopardized. Therefore, prolonged inadequate household food access leads to acquisition of insufficient quality and quantity of foods

that hardly meet all the household members' nutritional requirements for a productive life.

The HIV Nutrition Project's (HNP) food intervention study has set the improvement of household food security through an increased intake of animal source foods (ASF) as one of the project's core objectives. To address this objective, HNP is utilizing a series of proxy measures to capture changes in a household's ability to access food over time. These proxy measures include the Household Food Insecurity Access Scale (HFIAS), the Household Dietary Diversity Score (HDDS), and the Months of Adequate Household Food Provisioning (MAHFP) score. Household food insecurity also considers an individual's biological capacity to utilize the nutrients from food, which is likely to be impaired by insecure access to a good quality diet, difficulties accessing health services, and lack of knowledge about appropriate nutritional care and support; factors also being considered by HNP.

### Methods

During the HNP food intervention's Pilot Phase II, nine generic HFIAS questions representing a generally

Table 1. The 12 food groups used to calculate Household Dietary Diversity Scores (HDDS).

Cereals	Fruits	Fish and sea food	Oils/fats
Roots and tubers	Meat/poultry/offal	Pulses/legumes/nuts	Sugar/honey
Vegetables	Eggs	Milk and milk products	Miscellaneous

increasing level of food insecurity were asked of project participants, with a recall period of 30 days. A frequency-of-occurrence question was also asked to determine whether the condition happened rarely (once or twice), sometimes (three to 10 times) or often (more than 10 times). Each question received a minimum or maximum score of 0 or 3. The expected range of scores for all the nine questions was 0 to 27. The HDDS (Swindale et al., 2006) was used to determine the number of different food groups consumed by the household based on the previous 24-hours as the reference period. The above set of 12 food groups was used to calculate the HDDS value ranging from 0-12 (Table 1).

To collect the MAHFP data, HNP respondents were asked to think back over the previous 12 months, starting with the current month. The focus of these questions was to identify the months in which there was limited access to food regardless of the source.

### Preliminary Findings

Of the 225 women screened, 104 have been enrolled to date in the HNP study and baseline data has been collected. Table 2 provides distribution summaries of selected sociodemographic, health, and nutrition indicators for these respondents. Fifty one (49%) of the study households had an estimated total income of less than USD 1.00 per day. Households reported a yearly expenditure of less than USD 5.00 (34%), less than USD 7.00 (34.5%) and less than USD 93.00 (33%) for purchase of or payment for medicine, health care, and food stuffs, respectively.

Table 3 lists the number and percentages of household response to the nine frequency of occurrence questions. The FHIAS score (SD) was 7 (2.4). The percentage of food secure and mild, moderate, and severely food insecure households is shown in Figure 1. As shown in Figure 2, July (74%), August (83%), and September (72%) were the months when the majority of the households reported having inadequate food. The overall

MAHFP score (SD) was 5.24 (2.7). Of the 104 mothers, 93 had data on consumption of various food groups in the last 24 hours. Of these, 98% and 9.7% consumed cereals and tubers, respectively. Household consumption of primary vitamin and protein foods is shown in Figure 3. The HDD score (SD) was recorded as 6.14 (1.33).

### Practical Implications

Food insecurity limits capacity to meet the specific nutritional needs of HIV/AIDS affected people. The interaction between HIV/AIDS and food security has been

Table 2. Summary of the distribution of maternal demographic characteristics, health and nutrition status.

Indicator	# of Women <sup>a</sup> N=104	Value <sup>b</sup>
<b>Demographic characteristic</b>		
Age (years)	90	34.8 ± (7.0)
Estimated total income per year	104	
< 18,000 KSh*	35	10,382 ± (4,819)
18,000 - 37,900 KSh	32	26,720 ± (5,262)
38,000 – 96,900 KSh	29	58,027 ± (17,112)
> 96,900 KSh	8	191,437 ± (61,439)
Land and animal ownership	104	
No land		24 (20)
Owens < 2 acres		62 (50)
Owens no goats		97 (79)
Owens no rabbits		104 (100)
Employment status	104	
Casual work		35 (29)
Self employed		48 (39)
<b>Health and nutrition status</b>		
CD4 cell count, cells/μL	90	502 ± (212)
< 350 cells/μL		23 (25.6)
Hemoglobin, g/dL	90	12.4 ± ( 1.6)
< 11 <sup>c</sup>		22 (24)
BMI	92	22.4 ± (3.7)
< 18.5 <sup>d</sup>		10 (11)
18.5 – 20.5		22 (24.2)
20.5 – 25.5		43 (47)
> 25.5		16 (17.6)

Note: BMI = Body Mass Index; CD4 is a primary receptor used by HIV-1 to gain entry to host T-Cells; and TLC = Total Lymphocyte Count.

\*USD 1.00 = approximately 70-75 KSh at the time of study.

<sup>a</sup>For whom data were available; <sup>b</sup>Mean ± (SD) or no. (%) of women;

<sup>c</sup>Denoting anemia; and <sup>d</sup>Denoting chronic energy deficiency.

recognized relatively recently and interventions to address this issue continue to emerge. The HFIAP categorizes households into four levels of household food insecurity. It is expected that the reported 4.7% food secure households would experience none of the food insecurity conditions, or just experience worry, though rarely.

Table 3. Household perceptions on the ability to access food in the previous one month.

Indicator	Frequency of Occurrence N=104			
	Never	Rarely	Sometimes	Often
Worried about insufficient food	13 (12%)	13 (12%)	39 (37%)	41 (39%)
Not able to eat preferred foods	6 (6%)	13 (12%)	36 (34%)	51 (48%)
Ate a limited variety of foods	6 (6%)	14 (13%)	33 (31%)	53 (50%)
Ate no preferred foods	8 (8%)	12 (11%)	31 (29%)	55 (51%)
Ate smaller meals	9 (8%)	16 (15%)	27 (25%)	54 (50%)
Ate fewer meals	14 (14%)	13 (12%)	30 (28%)	49 (46%)
Ate no food at all	58 (54%)	15 (14%)	19 (18%)	14 (13%)
Slept hungry	66 (62%)	13 (12%)	17 (16%)	10 (9%)
Went a whole day without food	72 (67%)	9 (8%)	17 (16%)	8 (8%)

The 9.4% mildly food insecure households would worry about not having enough food and/or are unable to eat preferred foods. The 38.7% moderately food insecure households are likely to sacrifice quality more frequently, and may cut back on quantity by reducing size and number of meals. The 42.7% severely food insecure households are likely to often cut back on meal size or number of meals eaten, and/or go a whole day without eating, go to bed hungry, or run out of food. For up to six months of the year there is limited availability of food with the majority of households most vulnerable during the months July (74%), August (83%), and September (72%). The HDD score suggests a prevalence of low food diversity in diets, and except for milk, which is mostly consumed in tea, there was very minimal consumption of animal source foods.

The scores for these proxy measures of household food insecurity indicate that though the current CD4 counts and Body Mass Indices (BMI) of the study population are within normal range, their habitual diets are likely to be poor due to the high prevalence of food insecurity.

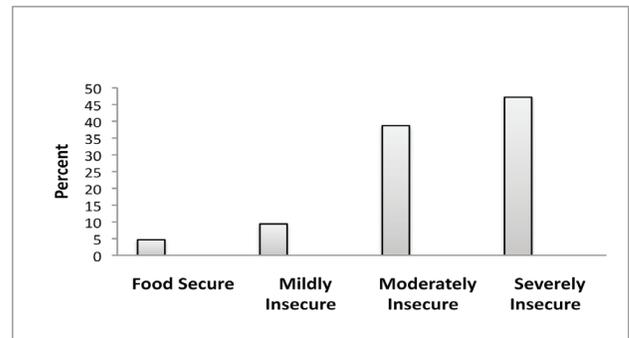
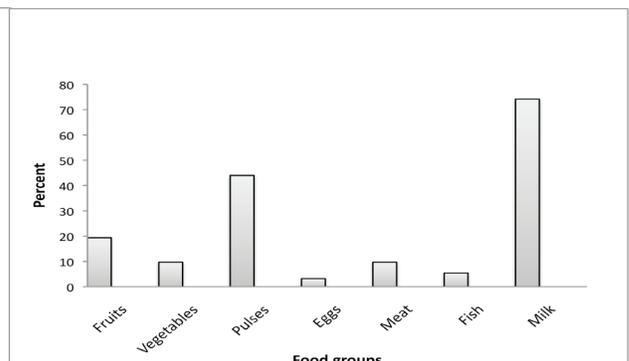
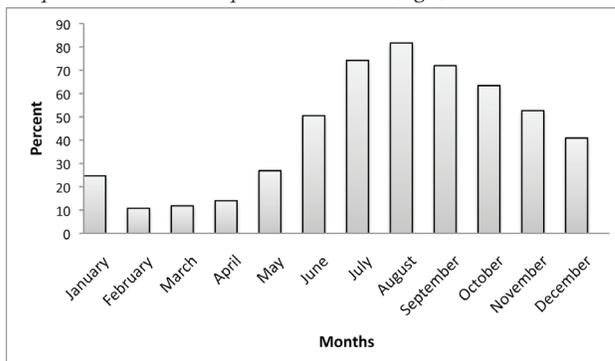


Figure 1. Prevalence of household food insecurity.

These proxy measures were chosen because they are sensitive to changes in the household's situation. The information they generated will be used to assess the prevalence of household food insecurity, and to detect changes in household food insecurity over time. The comparison of this data to future data will enable evaluation of the HIV Nutrition Project's food-based intervention to reduce under-nutrition and disease progression in rural HIV-infected and affected households.

Figure 2. Months in the previous year when households had inadequate food (left). Figure 3. Household consumption of primary vitamin and protein sources in the previous 24 hours (right).



## Further Reading

Bilinsky, P., and A. Swindale. 2007. *Months of Adequate Household Food Provisioning (MAHFP) for Measurement of Household Food Access: Indicator Guide*. Washington D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development. Available online: [www.fantaproject.org](http://www.fantaproject.org).

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*About the Authors:* Dr. Grace Keverenge-Ettyang is a Senior Lecturer in the Department of Epidemiology and Nutrition, Moi University School of Public Health. Email: [gaettyang@gmail.com](mailto:gaettyang@gmail.com). Dr. Charlotte Neumann is a Professor of Community Health Sciences and Pediatrics at the University of California, Los Angeles Schools of Public Health and Medicine. Email: [cneumann@mednet.ucla.edu](mailto:cneumann@mednet.ucla.edu). Dr. Judith Ernst is an Associate Professor of Nutrition and Dietetics at Indiana University School of Health and Rehabilitation Sciences. Email: [jernst@iupui.edu](mailto:jernst@iupui.edu).

The GL-CRSP HIV Nutrition Project (HNP) is evaluating the effect of protein quality and micronutrients in meat on the health and nutritional well-being of women living with HIV in rural Kenya and the health and development of their children by means of randomized controlled feeding intervention study. The project is led by Dr. Judith Ernst, Indiana University, Email: [jernst@iupui.edu](mailto:jernst@iupui.edu), and by Dr. Grace Ettyang, Moi University, Kenya, Email: [gaettyang@gmail.com](mailto:gaettyang@gmail.com).



The Global Livestock CRSP is comprised of multidisciplinary, collaborative projects focused on human nutrition, economic growth, environment and policy related to animal agriculture and linked by a global theme of risk in a changing environment. The program is active in East and West Africa, and Central Asia.

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