

Associations between Food Environment, Dietary Diversity, and Protein Intake among People Living with HIV in Dar es Salaam, Tanzania: Results from the DECIDE Study

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Background

- Adequate nutrient intake remains a challenge for People Living with Human Immunodeficiency Virus (PLHIV).¹
- PLHIV depend on good nutrition and higher dietary quality for better health outcomes and treatment adherence.³
- The Food Environment (FE) plays a major role in shaping individual dietary quality (diversity and nutrient adequacy).^{1,2}

Research Aims

Examine FE metrics in relation to:

- Minimum dietary diversity score
- Micronutrient adequacy ratio for vitamin A, vitamin C, Calcium, Iron and Zinc

Socio-demographic characteristics

Variable Name	All	Male	Female
Data presented as %	N=239	n=61	n=178
Age (years) [^]	40.4 (10.8)	44.5 (10.6)	38.9 (10.5)
HIV (years) [^]	5.5 (4.9)	4.7 (4.6)	5.7 (5.0)
Sex		25.5	74.5
Education			
None/incomplete	19.7	9.8	23.0
Primary/Complete standard 7	57.3	60.7	56.2
Secondary and above	23.0	29.5	20.8
Head of the household	46.9	72.1	38.2
Home Garden	28.2	31.2	27.5
Adequate Dietary Diversity (n=230)	20.4	20.0	20.6

[^] Data presented as mean (std dev)

Diversity and Density of Food Vendors by Distance from Respondent Households

Type of Vendor	200 meters	500 meters	1000 meters
Data presented as Median (Q1, Q3)			
Diversity[^]	0.86 (0.07)	0.85 (0.05)	0.82 (0.04)
Semi & informal vendors	19 (13, 33)	144 (95, 166)	477 (350, 589)
Semi formal vendors	5 (3, 10)	39 (27, 54)	150 (106, 215)
Formal vendors	16 (8, 24)	92 (67, 121)	298 (226, 390)
Vegetable greens	6 (4, 10)	102 (68, 124)	336 (263, 421)
Leafy greens	2 (1, 4)	18 (15, 26)	69 (57, 88)

[^] Data presented as mean (std dev)

References

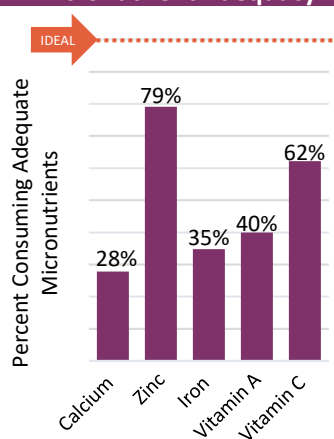
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Methods

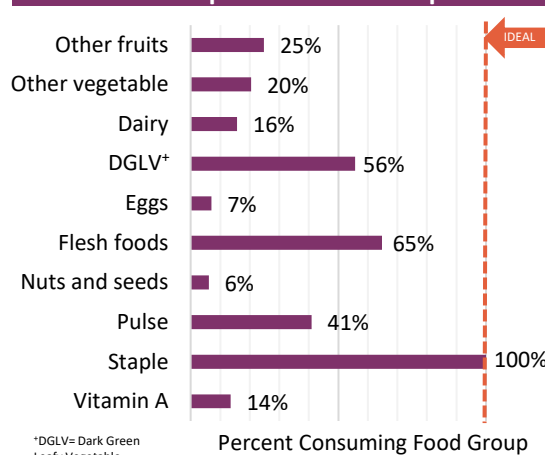
Data from the Diet, Environment, and Choices of Positive Living (DECIDE) Drivers of Food Choices study among PLHIV (N = 239) in peri-urban Dar es Salaam (March – June 2019)

- Data Collection & Management
 - 24hr dietary recall (dietary intake)
 - Minimum Dietary Diversity score (≥ 5 food groups out of 10 food groups, based on the Minimum Dietary Diversity for Women (MDD-W)⁴)
 - Nutrient adequacy ratio (NAR) - ratio of individual nutrient intake to the recommended nutrient allowance⁵
 - Geospatial Tablet-based Food Environment (FE) survey
 - Type of vendors - formal, semiformal & informal
 - Food vendors Density - within (100m to 1000m)
 - Food vendor Diversity - variety of vendors establishment within given distance
- Statistical Analysis
 - Descriptive: Mean/SD - Sociodemographic, dietary intake and FE variables
 - Logistic regression: associations between FE, MDD-W & NAR

Micronutrient Adequacy



Consumption of Food Groups



*DGLV= Dark Green Leafy Vegetable

FE and MDD-W*

MDD-W was **not significantly associated** with diversity and density of food vendors within 100m - 1000m.

FE and Micronutrient Adequacy Ratios*

- Calcium and Vitamin A adequacy were not associated with diversity and density of food vendors within 100m - 1000m.
- Zinc adequacy was negatively associated with food vendors diversity at 1000m ($p < 0.03$).
- Iron adequacy was associated with leafy greens vendors 200m (OR: 0.89 $p = 0.034$); density of informal vendor 200m (OR: 0.95, $p = 0.023$).
- Vitamin C adequacy associated with vegetable vendor density (OR: 0.89, $p = 0.03$).

*The models used were adjusted with age, years living with HIV, education, marital status, home gardens, wealth, head of household status.

Key Messages

Dietary Diversity of PLHIV in the study area was low (~20% adequate diversity).

Availability of food vendors within 100m – 1000m was not associated with individual dietary diversity.

Micronutrient adequacy was below 50% for Iron, Calcium and Vitamin A, while for Zinc and Vitamin C was above 50%.

In this peri-urban setting, **education** and **wealth** drive the potential of an individual to attain the recommended diet.

What needs to be done?

- Strategies to modify food environment to **support access to foods that improve nutrient adequacy** are needed.
- Enable an environment for informal vendors to sell nutritious foods at an affordable price
- More research to explore other factors that might contribute to an individual's ability to respond to the surrounding food environment (education and wealth status).

The Diet, Environment, and Choices of positive living (DECIDE study) is a collaborative project led by the Purdue University, University of Illinois Chicago, Muhimbili University, and Africa Academy of Public Health. We acknowledge and are grateful for the collaboration & support of the DECIDE study families. The DECIDE study is funded by the Drivers of Food Choice (DFC) Competitive Grants Program.

