The Dietary Intake, Food Security, and Quality of Life of HIV-Positive Individuals receiving Home Delivered Meals

Stephanie Shao[1], Isy Tavarez[1], Xindi Fang[1], and Mariam Girguis[1], Britton Gibson[1], Debbie Humphries[2], and Chris Cole[3]

[1]MPH students, Yale School of Public Health, [2]Clinical Instructor, Yale School of Public Health, [3]Executive Director, AIDS Project New Haven

Background: There are currently about 11,000 people living with HIV/AIDS (PLWHA) in Connecticut[1], and the city of New Haven holds the second largest number of PLWHA in the state. The steady rise in the prevalence of HIV in Connecticut is a reason for concern, as the PLWHA have unique health needs that can influence their prognosis[2]. In particular, the impact of nutrition on the health of PLWHA is of great importance and should be carefully considered when working with this population. Three primary pathways have been identified through which nutrition can significantly affect people infected with HIV: (a) poor nutritional status speeds up the progression from HIV to AIDS, (b) the presence of the HIV virus increases the body's energy demand, and (c) antiretroviral therapy alters metabolism which can lead to further health complications[3]. Thus, the development of interventions that aim to improve the nutritional status of PLWA is essential.

AIDS Project New Haven (APNH) is a program that takes a holistic and comprehensive approach to addressing the needs of PLWA in the New Haven area. They have developed *Caring Cuisine,* an initiative that provides home delivered meals to APNH clients that were identified as having food insecurity and an inability to access congregate meal sites due to factors such as disability, drug use, or other limiting co-morbidities. To better understand the influence of *Caring Cuisine* home meal delivery program on food security, dietary intake, mental health, and quality of life, a team of four students conducted a study that describes the clients of APNH and provides a comparison of *Caring Cuisine* clients and non-homebound clients.

Objective: To characterize Caring Cuisine and non-Caring Cuisine clients of APNH through analysis of demographic data. Additionally, this study will describe the food security, dietary intake, risk behaviors mental health, and quality of life of PLWHA receiving home delivered meals and those who do not.

Methods

This study was conducted in two parts: a medical chart review and patient interviews.

Chart review: All active APNH client charts (n=164) were reviewed. Extracted and analyzed general demographics, housing stability, household size, use of food vouchers, CD4 count, and viral load.

Patient interviews: Interviews were conducted from a convenience sample of *Caring Cuisine* clients (n=11) and Case Management clients (n=10). Previously validated questionnaires (Table 1) were used to measure food insecurity, dietary intake, HIV/AIDS risk behaviors, and quality of life.

Table 1: Survey Tool	Measure
Household Food Insecurity Access Scale (HFIAS)	Food Security
Rapid Eating Assessment for Patients (REAP)	Dietary Intake Physical Activity Ability to shop and prepare meals
Bradley et. al.	HIV Risk Behaviors
Medical Outcome Study- HIV Health Survey	Quality of Life Mental Health Physical Disability

Resources:
REAP questionnaire: http://www.aptrweb.org/educationforhealth/Case%20Study%20Materials/NURSING%20UNDERGRADUATE/Quinnipiac_Yanni_RapidEatingAssessment.pdf
USAID Food Security questionnaire: http://pdf.usaid.gov/pdf_docs/PNADK896.pdf
MOS-HIV questionnaire: http://www.jhsph.edu/bin/m/r/MOS-HIV-Eng.pdf

Results:

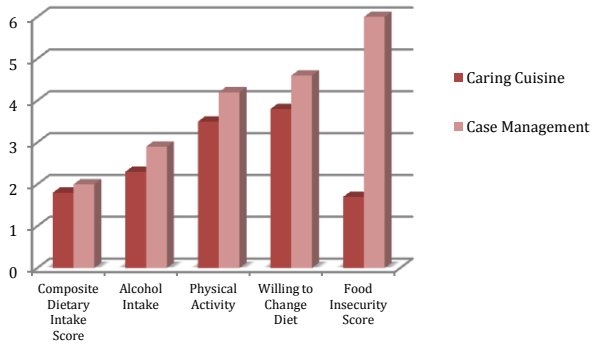
- Participants in Caring Cuisine were older, had lower annual income, resided in more stable housing, had smaller household sizes, and reported lower use of food vouchers than Case Management clients (Table 2).
- Caring Cuisine clients reported that they were more food secure than Case Management clients (Figure 1).
- Caring Cuisine clients reported less health eating habits than Case Management clients, had less alcohol intake, less physical activity, and were less willing to change their diet (Figure 2).
- Caring Cuisine clients ate more fruits, vegetables, meats and whole grains compared to Case Management Clients, but consumed more saturated fats, cholesterol, sodium and sugars.

Table 2: Subject Characteristics Obtained from Medical Chart Review for all active HIV-Positive APNH Clients (n=164)

Subject Characteristics	Caring Cuisine (n=61)	Case Management (n=85)	*p*-value
Age, mean (SD)	54.67 (8.71)	50.79 (8.39)	<0.01[a]
Annual Income, median (IQR)	$8,328 (5,127)	$10,512 (4,624)	<0.05[b]
Housing Status, n (%)			<0.05[c]
Nonpermanent or institution	4 (9.7)	19 (25.7)	
Permanent	37 (90.3)	55 (74.3)	
Household Size			<0.01[c]
1	33 (57.9)	71 (86.6)	
≥ 2	24 (42.1)	11 (13.5)	
Viral Load suppression n (%)	31 (58.5)	30 (35.7)	<0.01[c]

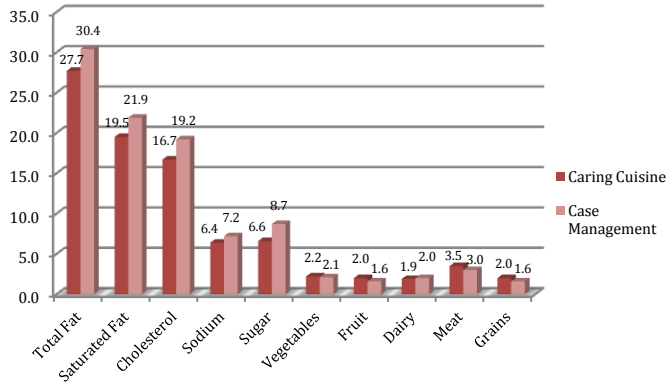
Note: **Numbers may not add up to group total due to missing observations; Column percents are based on observation number in category; Column percent totals may not sum to 100% due to rounding;**
IQR, Interquartile Range; SD, Standard Deviation
[a] ANOVA Test
[b] Wilcoxon Rank Test
[c] Chi-square Test

Figure 1: Food Insecurity, Diet, and Exercise Scores for *Caring Cuisine* and Case Management Clients



Note: Composite Dietary Intake Scores were created based on the response to the REAP questionnaire, with a higher score indicating healthier eating habits. A higher alcohol intake score indicated less frequent alcohol use, a higher physical activity score indicated increased physical activity and a higher "willingness to change" score indicated a higher reported willingness to change diet. Higher food insecurity score indicates a lower ability to obtain food.

Figure 2: Dietary Intake of *Caring Cuisine* and Case Management Clients



Note: Dietary Intake Scores were created based on the response to the REAP Questionnaire, with a higher score indicating healthier eating habits.

Recommendations

- Develop means of gaining a deeper understanding of dietary patterns of people that are comparable to *Caring Cuisine* clients but are not in *Caring Cuisine* program
- Provide education on healthy eating habits in conjunction with provision of *Caring Cuisine* meals
- Investigate strategies to improve food security among Case Management clients

Conclusions

Caring Cuisine clients significantly differ from Case Management clients regarding age, annual income, housing status, household size, and viral load suppression. *Caring Cuisine* clients had greater alcohol intake, less physical activity, and were less likely to change their diet than Case Management clients. *Caring Cuisine* clients also had less healthy eating habits than Case Management clients and while they consumed more fruits, vegetables, and grains, their diets also had more total fat, saturated fat, sodium, cholesterol, and sugars.

Limitations

- Cross-sectional design limits ability to look at temporal trends
- Small sample size of questionnaires limits ability to detect statistical significance
- Incomplete chart review data due to missing information in some charts

References:

1. New Haven, CT. Connecticut Department of Public Health. AIDS and Chronic Disease Section. *Epidemiologic Profile of HIV/AIDS in Connecticut*. 2010.
2. Program CDoPHHS. Trend in HIV Infection cases by year of diagnosis, death, and prevalence (1980-2009). State of Connecticut, 2011.
3. Kimani-Murage EW, Norris SA, Pettifor JM, et al. Nutritional status and HIV in rural South African children. *BMC Pediatr* 2011;11:23.