Addressing Chronic Disease Risk Factors among Urban Low-Income Adults: The Role of Nutrition Education in Community Health Centers

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FOOD AND NUTRITION PROGRAM

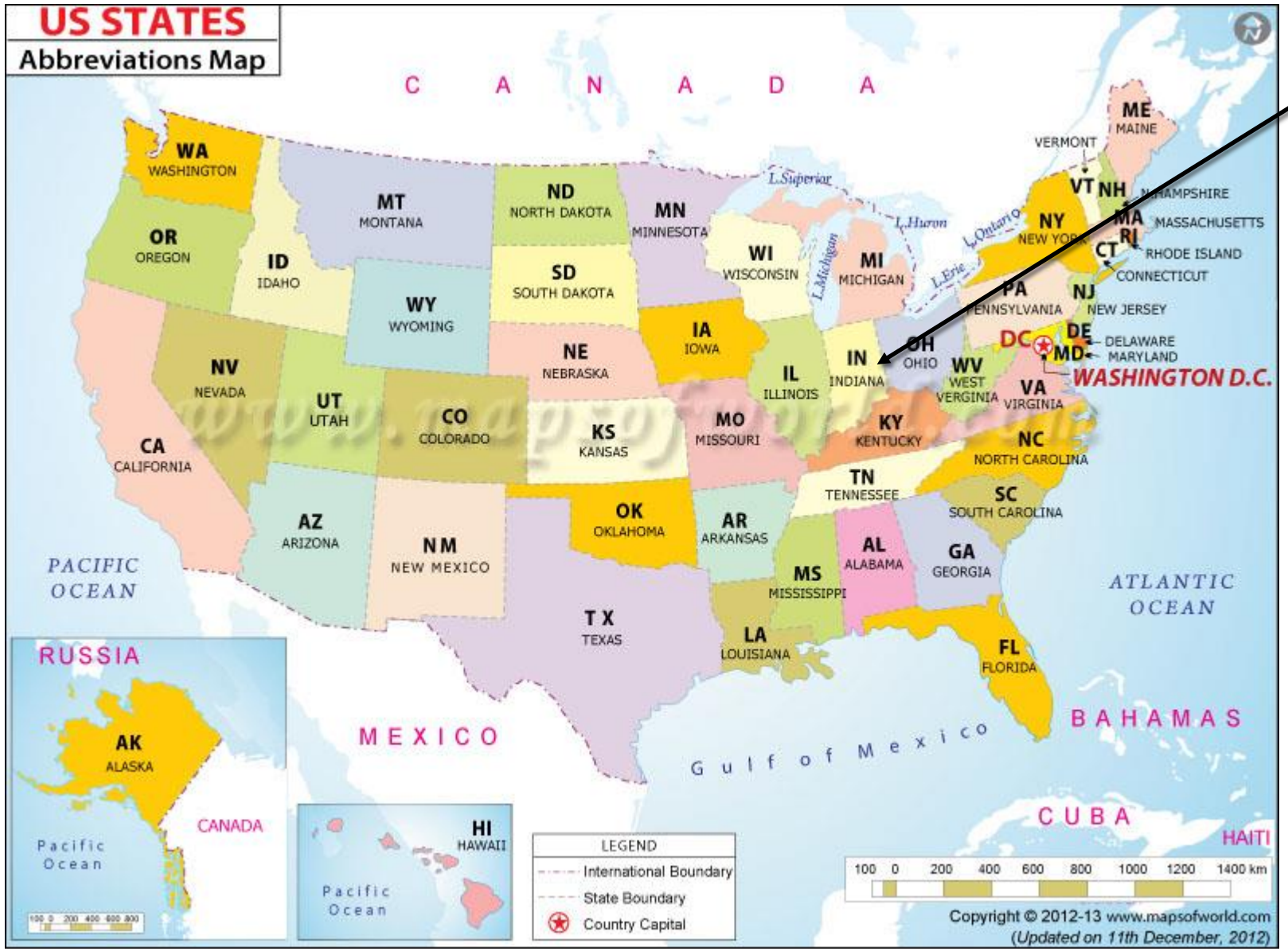
UNIVERSITY OF SOUTHERN INDIANA

EVANSVILLE, IN 47712, USA



Presentation Objectives

1. Describe project setting and population
2. Describe project and interventions
3. Describe project findings and implications



Indiana vs USA

66% vs 64%

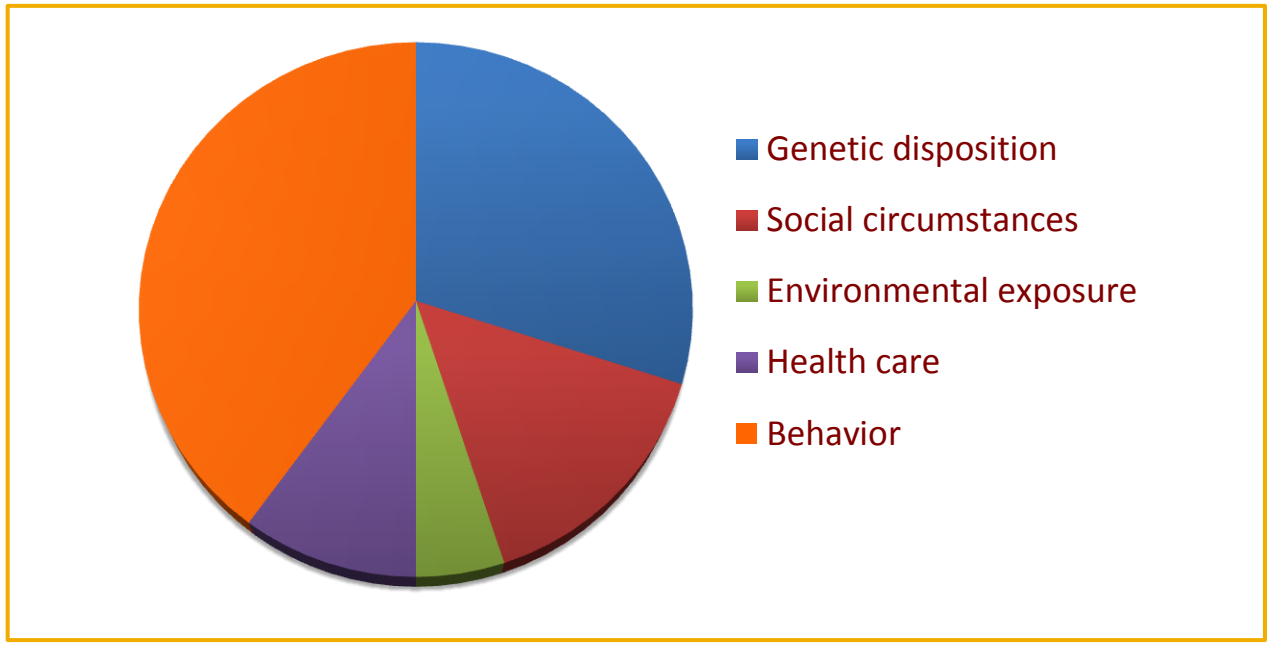
76% vs 79%



Vanderburgh County
42% of all deaths

Source: Indiana State Department of Health

Behavioral causes account for nearly 40% of all deaths in the U.S.



Schroeder 2007 NEJM; 357: 1221-1228

Adult Obesity Rates in Indiana State

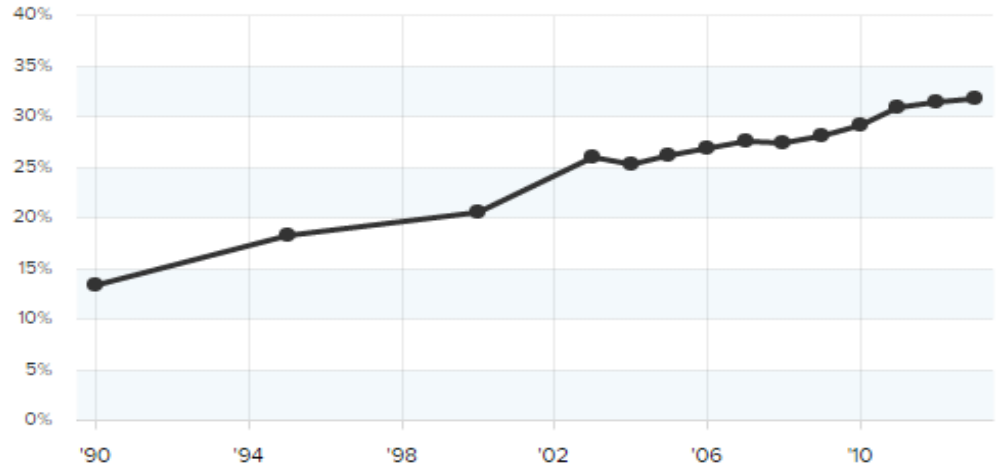
Current adult obesity rate (2013)

31.8%

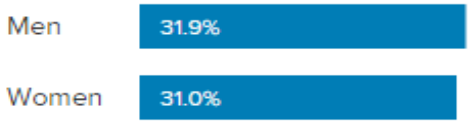
Rank among states (2013)

9/51

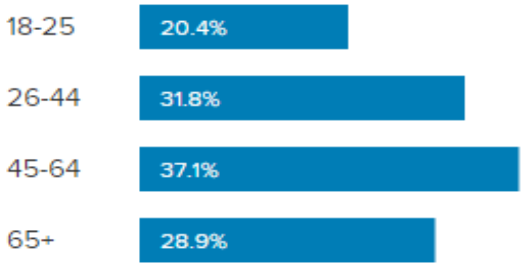
Adult obesity rate in Indiana (1990-2013)



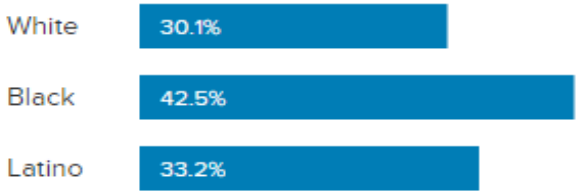
Obesity rate by gender (2012)



Obesity rate by age (2013)

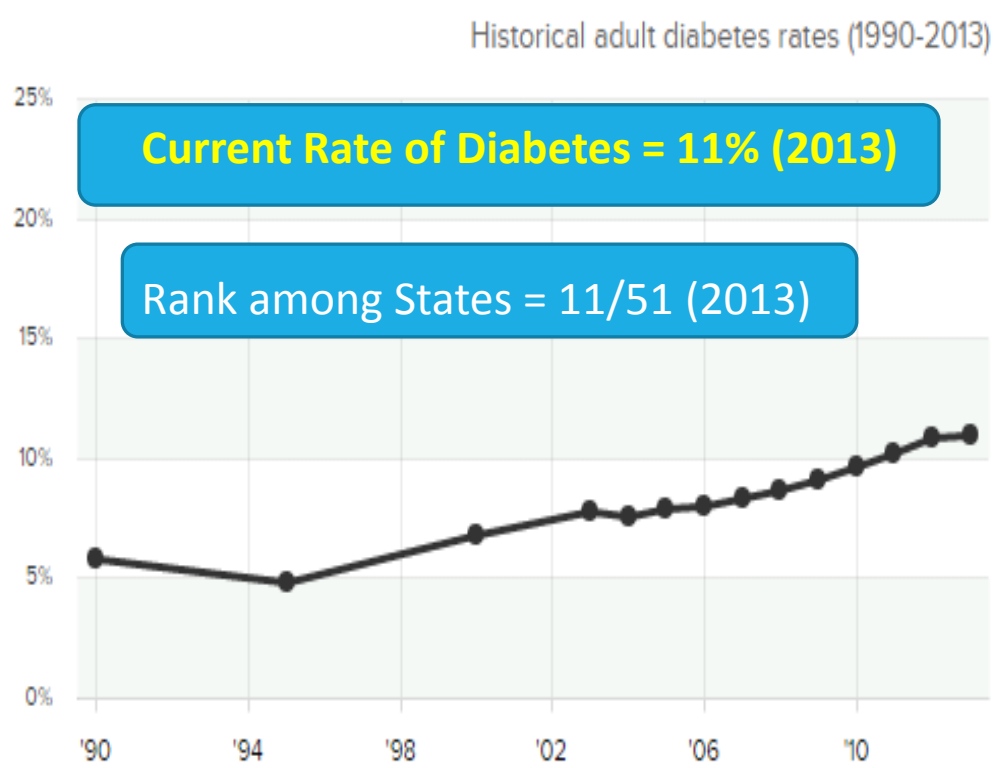


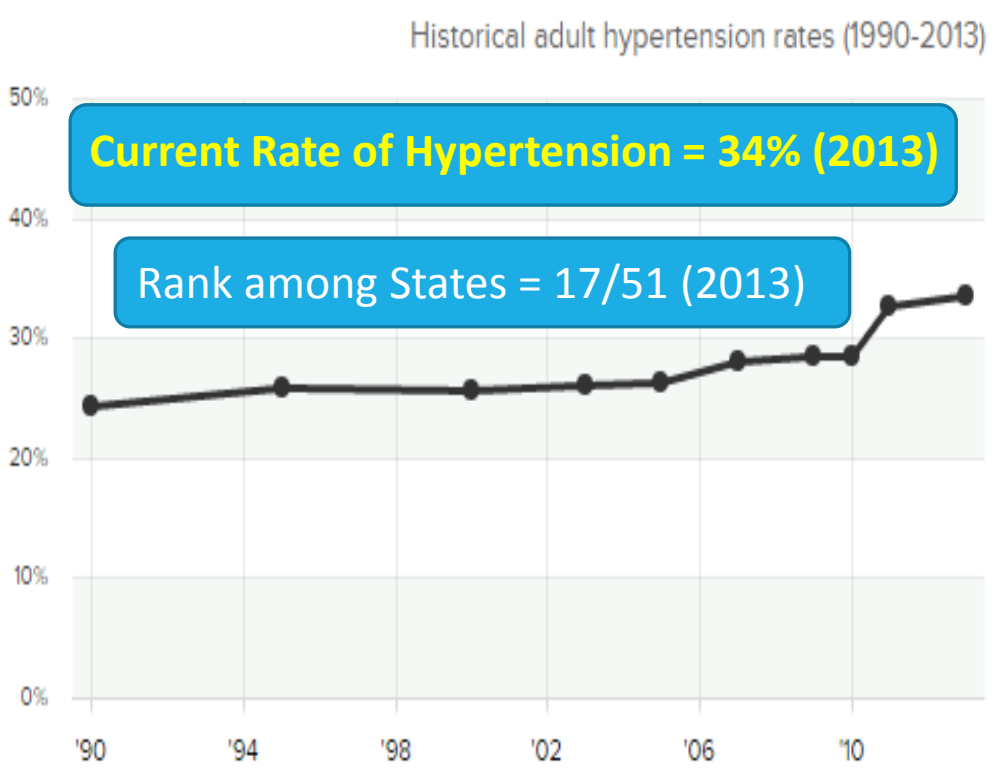
Obesity rate by race (2013)



Source: Trust for America's Health and Robert Wood Johnson Foundation. The State of Obesity 2014 [PDF]. Washington, D.C.: 2014.

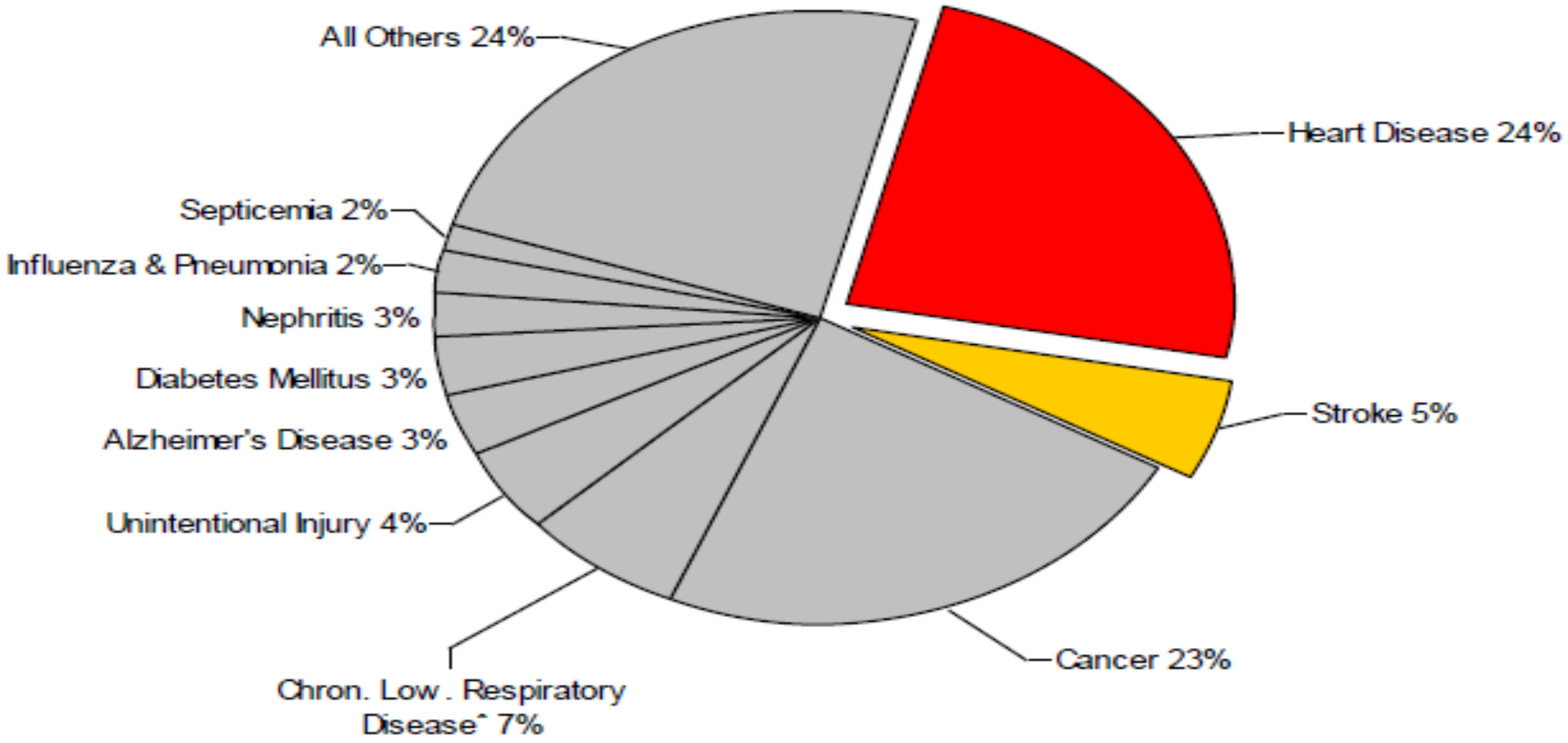
Obesity-Related Health Issues- Indiana





Sources: Current diabetes (2013) and hypertension (2013) rates are from The State of Obesity 2014

Leading Causes of Death in Indiana



Source: Indiana State Department of Health







College of Nursing and Health Professions

Community Health Center opens at EVSC's Glenwood Leadership Academy





Food Access Study - 2011

Theuri W. S, McCullough L.W, Rennels, J. (2015). Assessing of Access to Fruit and Vegetable in Urban Underserved Communities. *Journal of Hunger and Environmental Nutrition.* 10(4) DOI 10.1080/19320248.2015.1045669.

Nutrition Intervention Project

- Explored EHR to determine rate of obesity and nutrition related health condition in adults (≥ 18 years)
- May 2012 and June 2013
- Obesity: 38%
- Hypertension: 44%
- Obesity/hypertension: 20%



Nutrition Intervention Project

June and August 2014

Patients referred to nutritionist if:

- Had hypertension, obesity, heart disease or diabetes
- 18 years or older
- Signed informed consent
- Spoke English



Assessment

Dietary Intake

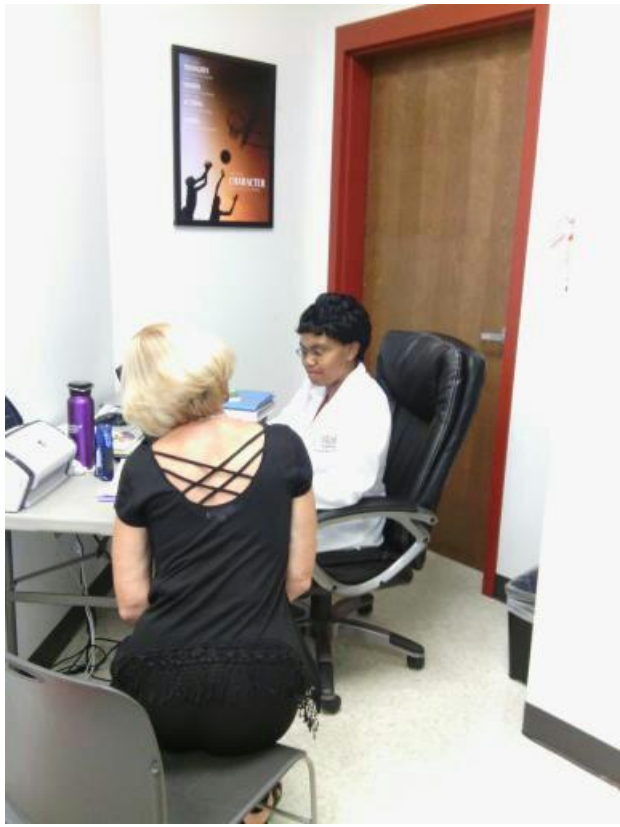
- Validated food frequency questionnaire (FFQ)

Anthropometric

- Weight
- Height
- BMI
- Blood Pressure

Laboratory Assessment

- Total cholesterol
- LDL cholesterol
- HDL cholesterol
- Fasting glucose
- Hemoglobin A1a



Statistical Analysis

Demographic data

- Means, standard deviation, frequencies

Bivariate associations

- Chi square tests
- Student t-test
- Spearman’s correlation

Multiple linear analysis

Results

Demographics

- Thirty two adults (72% women, 28% men)
- Mean age 44.31 ± 12.29
- 69% white and 32% of minority race.
- Majority (59.3%; $P < .007$) were unemployed,
- Those employed earned less < $15,000.

Anthropometric Data by Race

Table 1.			
Variable	White (mean SD)	Minority (mean SD)	Total
Weight (lb.)	247.05 ± 61.43	249.20 ± 57.12	247.73 ± 59.21
n (%)	22 (68.75)	10 (31.25)	32
Obesity (BMI)	38.86 ± 6.31	41.78 ± 9.19	39.74 ± 7.26
n (%)	21 (70.00)	9 (30.00)	30

Average BMI was high (39.74 ± 7.26) in 88% of the sample

Table 2. Participant Risk Factors by Race

Variable	White (mean SD)	Minority (mean SD)	Total	P Value
Total Cholesterol (mg/dl)	**182.15 ± 24.03**	**176.67 ± 10.01**	**181.12 ± 21.92**	**.551**
n (%)	13 (81.25)	3 (18.75)	16	
HDL-C (mg/dl)	**42.72 ± 13.79**	**49.33 ± 1.52**	**44.14 ± 12.44**	**.149**
n (%)	11(78.57)	3 (21.42)	14	
LDL-C (mg/dl)	**110.27 ± 18.49**	**107.00 ± 26.65**	**109.40 ± 19.97**	**.832**
n (%)	11 (73.33)	4 (26.66)	15	
Plasma glucose(mg/dl)	**123.18 ± 75.01**	**102.67 ± 13.83**	**117.59 ± 64.44**	**.309**
n (%)	16 (72.72)	6 (27.27)	22	
Glucose A1C (%)	**8.28 ± 2.40**	**5.80 ± 0.47**	**7.32 ± 2.24†**	**.023***
n (%)	8 (61.54)	5(38.46)	13	
Systolic blood pressure (mm Hg)	**128.55 ± 18.92**	**125.63 ± 13.56**	**127.71 ± 17.36**	**.653**
n (%)	20 (71.42)	8 (28.57)	28	
Diastolic blood pressure (mm Hg)	**84.25 ± 25.90**	**75.13 ± 12.65**	**81.64 ± 23.05**	**.224**
n (%)	20 (71.42)	8 (28.57)	28	





















Sources of high fat and cholesterol assessed in the FFQ Survey

Correlations between weekly food group intakes, and health parameters in white patients (n=22)

Table 3.

	Meat	Eggs	Diary	Cheese	Frozen Dessert	Fried Food	Baked Goods	Convenience Foods	Fats	Snacks
Weight, lb	-0.021	0.186	0.122	0.331	-0.559*	0.072	0.099	-0.173	0.278	0.191
BMI	-0.237	-0.314	0.142	0.113	-0.324	-0.181	-0.242	0.204	0.062	-0.180
T-CH	-0.137	0.097	0.050	0.126	-0.409	-0.051	-0.501	-0.487	0.358	-0.098
HDL-C mg/dl	-0.300	-0.164	-0.309	-0.063	-	-0.300	-0.504	0.038**	0.655	-0.454
LDL-C mg/dl	-0.463	0.000	-0.674	0.026	-	-0.056	-0.603	-0.822*	0.126	-0.394
PLG mg/dl	0.079	0.535**	-0.207	-0.125	-0.463	0.235	0.490	-0.375	-0.098	0.408
A1C %	0.231	0.200	-0.302	0.056	0.206	0.724*	-0.364	-0.422	-0.472	-0.019
SBP mm Hg	-0.118	0.161	0.233	-0.101	-0.007	0.222	-0.138	0.127	-0.602*	-0.327
DBP mm Hg	0.041	-0.033	0.267	0.083	0.180	0.292	-0.113	0.334	-0.462	-0.185

Correlations between weekly food group intakes, and health parameters in minorities (n = 9)

Table 4.										
	Meat	Eggs	Diary	Cheese	Frozen Dessert	Fried Food	Baked Goods	Convenience Foods	Fats	Snacks
Weight, lb	0.0525	-0.414	0.278	0.093	-0.414	0.000	-	-0.772**	-0.655	-0.093
BMI	-0.235	-0.315	0.000	0.235	-0.525	-0.210	-	-0.548	-0.399	0.141
T-CH	-	-	-	-	-	-	-	-	-	-
HDL mg/dl	-	-	-	-	-	-	-	-	-	-
LDL mg/dl	-	-	-	-	-	-	-	-	-	-
PGL mg/dl	-0.866	0.866	0.000	-0.866	0.000	-0.866	-	0.500	0.866	-0.500
A1C %	-0.866	0.866	0.000	-0.866	0.000	-0.866	-	0.500	0.866	-0.500
SBP mm Hg	0.000	0.289	0.447	0.211	0.815	0.289	-	0.316	0.354	0.474
DBP mm Hg	0.000	0.289	0.447	0.211	0.866	0.289	-	.0354	0.474	

Conclusion

Obesity and glucose control is the most significant problem among the study sample. A multifaceted approach to nutrition intervention programs would to reduce poor health indicators.

Implications

- Future Research – Longitudinal studies to interventional impact on reducing obesity and uncontrolled blood sugar rates.
- Develop alliance with health care staff and community leaders in efforts to support sustainable nutrition programs with a wider reach

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