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**DIETARY ACCULTURATION AND  
PREDICTORS OF ANTHROPOMETRIC  
INDICATORS AMONG FILIPINO  
AMERICANS IN UNITED STATES**

# Background

One of the Healthy People 2020 goals is to increase the proportion of adults who are at healthy weight and reduce the proportion of adults who are obese (USDHSS, 2010).

# What is Acculturation?

Acculturation is a multidimensional process of overall adaptation of groups and individuals to a new society; cultural, psychological, social, economic, and political changes are involved (Satia, 2010; Lee, Sobal, & Frongillo, 1999)

# What is Dietary Acculturation?

Dietary Acculturation refers to the process that occurs when members of a minority group adopt the eating patterns/food choices of the host country (Satia et al., 2002)



## Nutrition transition

- a. Switched to energy dense and processed food → high fat and high sugar intake
- b. Lesser consumption of fruits and vegetables
- c. More consumption of meals outside home

## Weight gain and risk of obesity

- a. Increases in anthropometric indicators

Body Mass Index (BMI), Waist Circumference (WC), and Waist Hip Ratio (WHR)

# Problem Statement

Little published information about dietary consumption of fat, sugar, fruits and vegetables intake of FAs living in US and the relationship among their level of acculturation and its association to their anthropometric indicators



# Purpose of the Study

Describe the relationship among dietary consumption of fat, sugar, fruits and vegetables, dietary acculturation and anthropometric measurements among FAs in US.

# Significance of the Study to Nursing

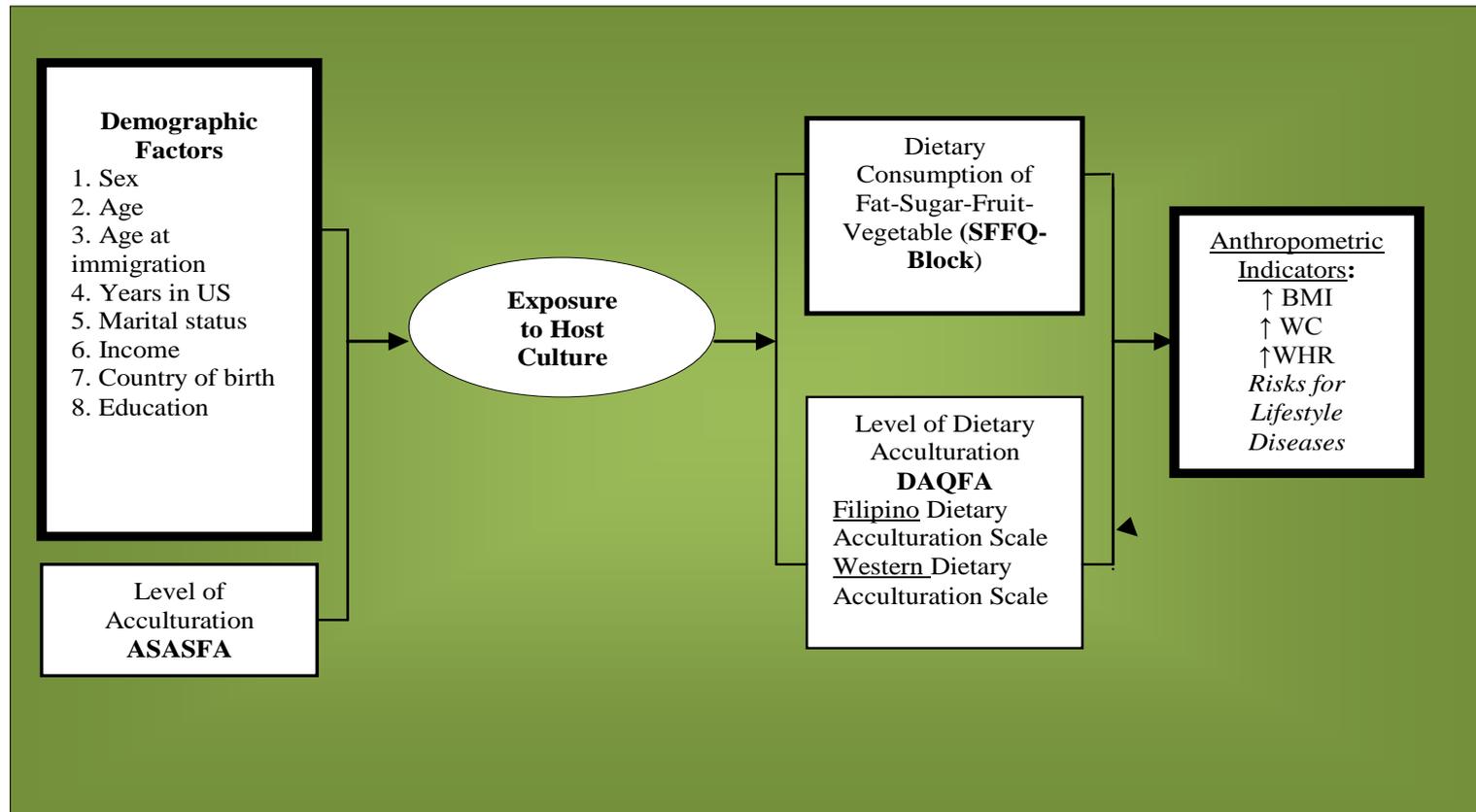
Findings from this study could expand nursing knowledge by helping nurses and other health care providers (HCPs) understand the effect of acculturation and dietary practices and their impact on anthropometric indicators and chronic diseases among FA clients

# Gaps in Literature

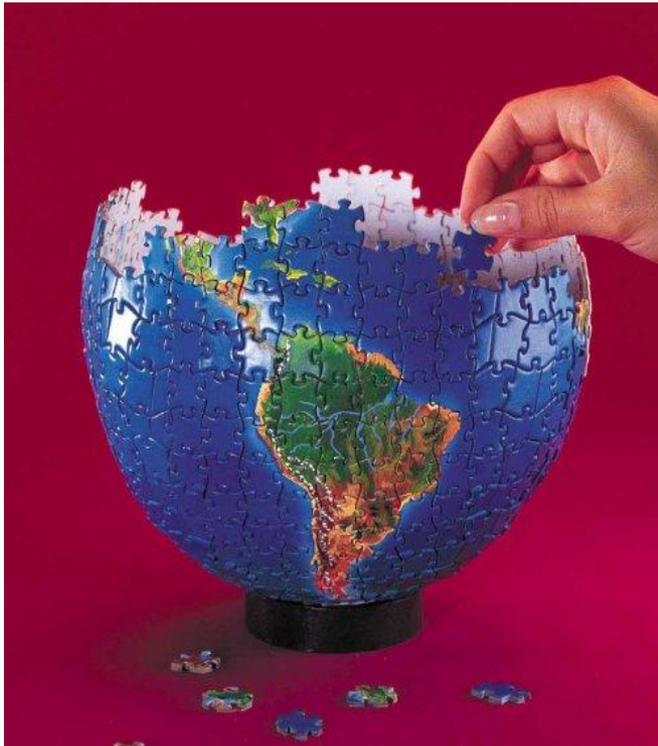
1. Knowledge concerning FAs dietary practices when acculturating to US was sparse
2. Impact of sociodemographics, level of acculturation, dietary acculturation, dietary consumption of fat, sugar, fruits, and vegetables to anthropometric measurements of FA has not been studied

# Theoretical Framework

## Adapted Model of Dietary Acculturation for FAs



# Methodology



## Statistical Design

Correlational,  
Descriptive, & Partial  
Least Squares Path  
Modeling were used  
to address the  
research questions

# Sampling

## Sample

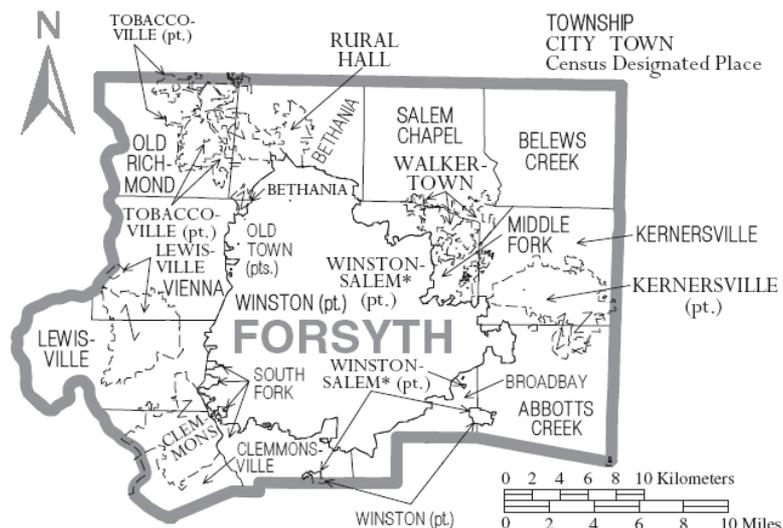
Convenience sample  $N=128$  living in Southeastern part of US

2 FAs Baptist churches, Filipino events, stores, day care, agencies, beauty parlor, and by word of mouth

\$10 Wal\*Mart gift certificates

Data collection took over 3 months

IRB approval is obtained from the institution



# Instruments

- ⦿ Sociodemographic Questionnaire
- ⦿ A Short Acculturation Scale for Filipino American (ASASFA)
- ⦿ Block Short Food Frequency Questionnaire (SFFQ)
- ⦿ Dietary Acculturation Questionnaire for Filipino American (DAQFA)

# Anthropometric Measurements



# Results

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Sociodemographic characteristic	Category	<i>n</i> (%)
Gender	Female	99 (77.3%)
	Male	29 (22.7%)
Place of birth	Philippines	122 (95.3%)
	Other	6 (4.7%)
Annual household income	< \$25000	11 (8.6%)
	\$25000-\$49999	55 (43.0%)
	\$50,000-\$75000	56 (43.8%)
	>\$75000	4 (3.2%)
	Missing values	2 (1.6%)
Marital status	Single	40 (31.3%)
	Married	77 (60.2%)
	Divorced/separated	8 (6.3%)
	Missing values	3 (2.3%)

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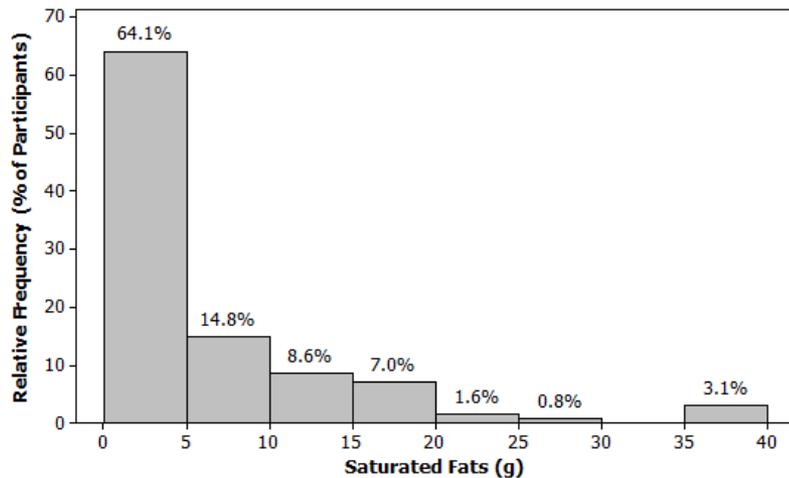
# Demographic Profiles

Years	Mean	Median	<i>SD</i>	Min.	Max.	K-S	<i>p</i>
Age	44.4	44.5	10.5	19	74	.789	.562
Length of US residency	7.8	7.0	5.1	1	25	1.141	.037
Age of arrival in US	36.6	37.0	8.9	18	72	.818	.515
Academic education	13.5	14.0	1.9	8	18	.515	<.001*

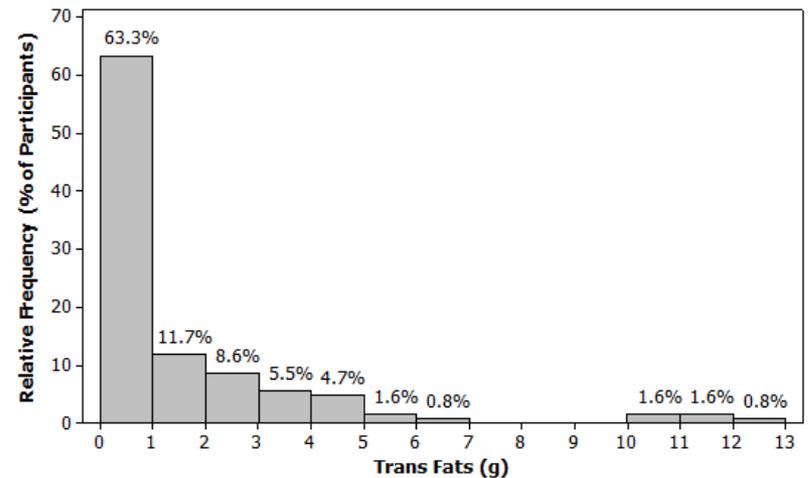
# Frequency of distribution of body measurements

Body-measurement category	Direction of change	Total ( <i>N</i> = 128)	Male ( <i>n</i> = 29)	Female ( <i>n</i> = 99)
Change in body weight	Increased	63 (49.2%)	18 (62.1%)	45 (45.5%)
	Decreased	1 (.8%)	0 (.0%)	1 (1.0%)
	No change	64 (50.0%)	11 (37.9%)	53 (53.5%)
Change in waist measurement	Increase	64 (50.0%)	17 (58.6%)	47 (47.5%)
	Decrease	3 (2.3%)	1(3.4%)	2 (2.0%)
	No change	61 (47.7%)	11 (37.9%)	50 (50.5%)
BMI category	Normal	92 (71.9%)	17 (58.6%)	75 (75.8%)
	Overweight	32 (25.0%)	12 (41.4%)	20 (20.2%)
	Obese	4 (3.1%)	0 (.0%)	4 (4.0%)

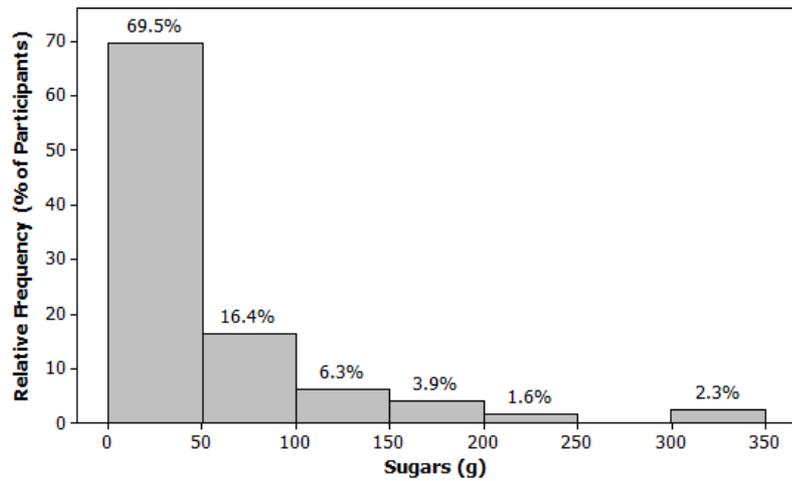
# What is the dietary consumption of fat, sugar, fruits and vegetables among FAs in US?



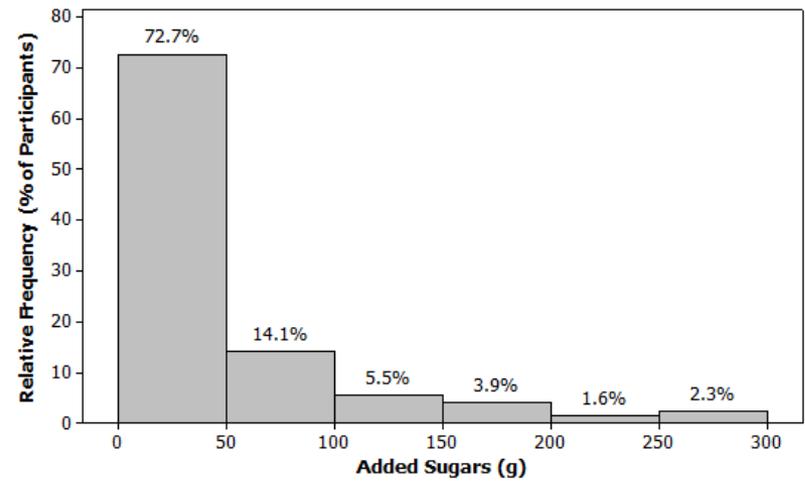
Saturated Fats



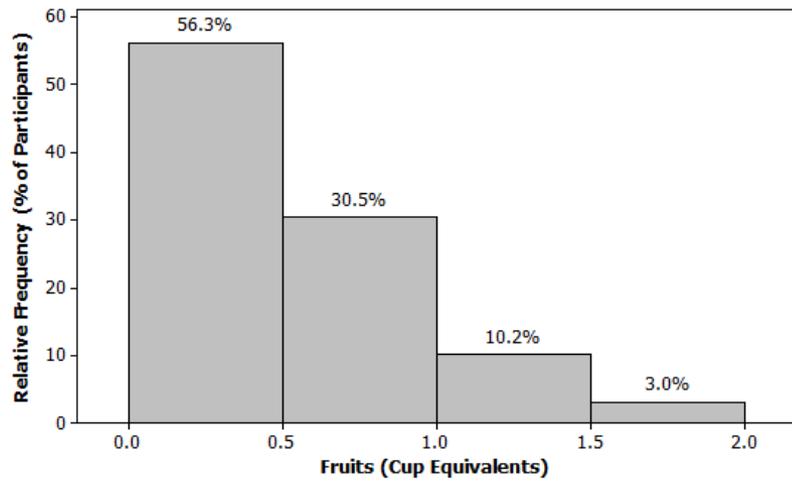
Trans Fats



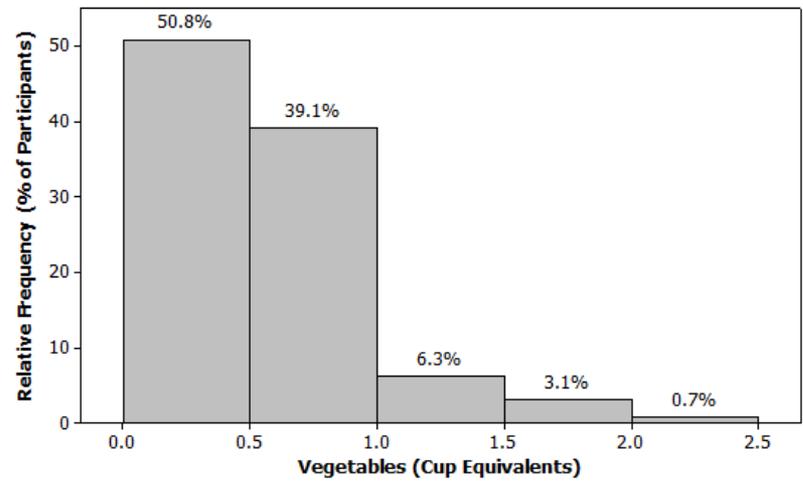
Sugars



Added Sugars

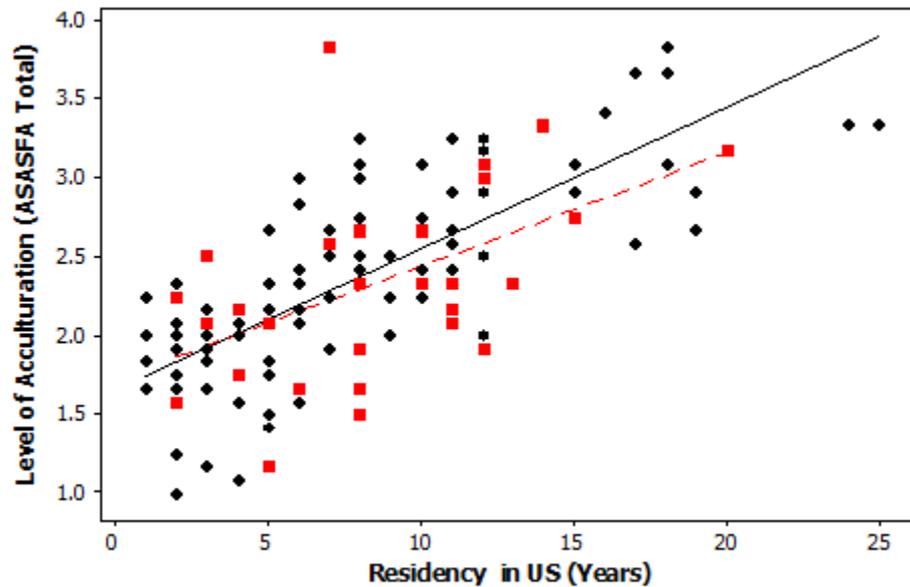


Fruits

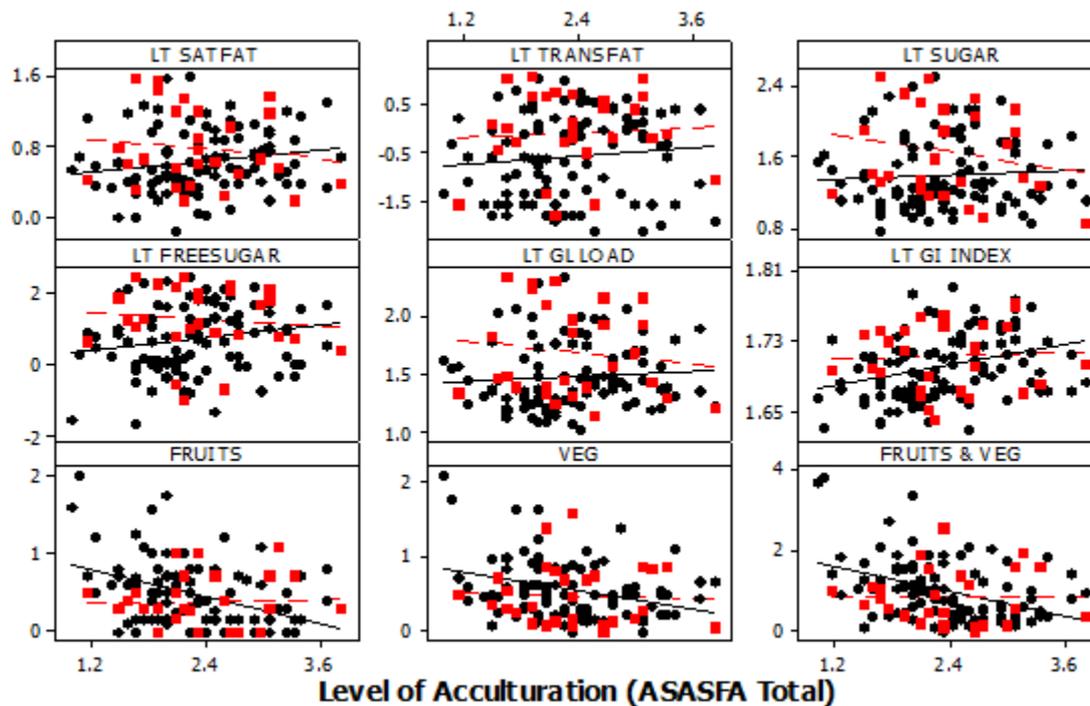


Vegetables

# Relationship between acculturation and residency



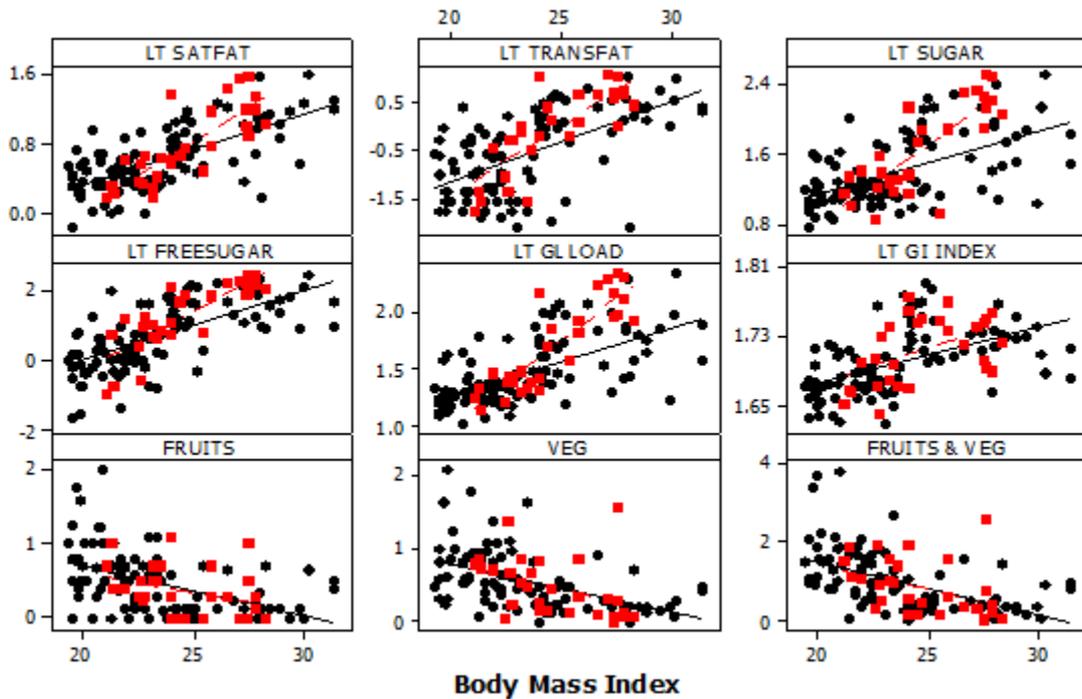
# Correlations between acculturation and dietary consumption



# Are demographic variables and level of acculturation related to dietary acculturation?

Item	No	Yes
DAQFA Fil 1 Eat dishes made with rice	0 (.0%)	128(100.0%)
DAQFA Fil 2 Eat traditional Filipino breakfast	40 (31.3%)	88 (68.8%)
DAQFA Fil 3 Eat traditional Filipino snacks/merienda	63 (49.2%)	65 (50.8%)
DAQFA Fil 4 Eat traditional Filipino cooked meal	41 (32.0%)	87 (68.0%)
DAQFA Fil 5 Eat traditional Filipino mixed dishes	47 (36.7%)	81 (63.3%)
DAQFA West 1 Eat French fries, onion rings hush puppies	42 (32.8%)	86 (67.2%)
DAQFA West 2 Eat sweets, cakes, or pies for dessert	68 (53.1%)	60 (46.9%)
DAQFA West 3 Drink/eat milk products, shakes, ice creams	89 (69.5%)	39 (30.5%)
DAQFA West 4 Drink sweet tea	60 (46.9%)	68 (53.1%)
DAQFA West 5 Eat at Western fast-food restaurants	56 (43.8%)	72 (56.3%)
DAQFA West 6 Eat at buffet restaurants	76 (59.4%)	56 (43.8%)
DAQFA West 7 Eat deli meat	114 (89.1%)	14 (10.9%)
DAQFA West 8 Eat packaged/prepared foods; TV meals	118 (92.2%)	10 (7.8%)
DAQFA West 9 Drink carbonated drinks	66 (51.6%)	62 (48.4%)
DAQFA West 10 Eat any kind of cheese	110 (85.9%)	18 (14.1%)

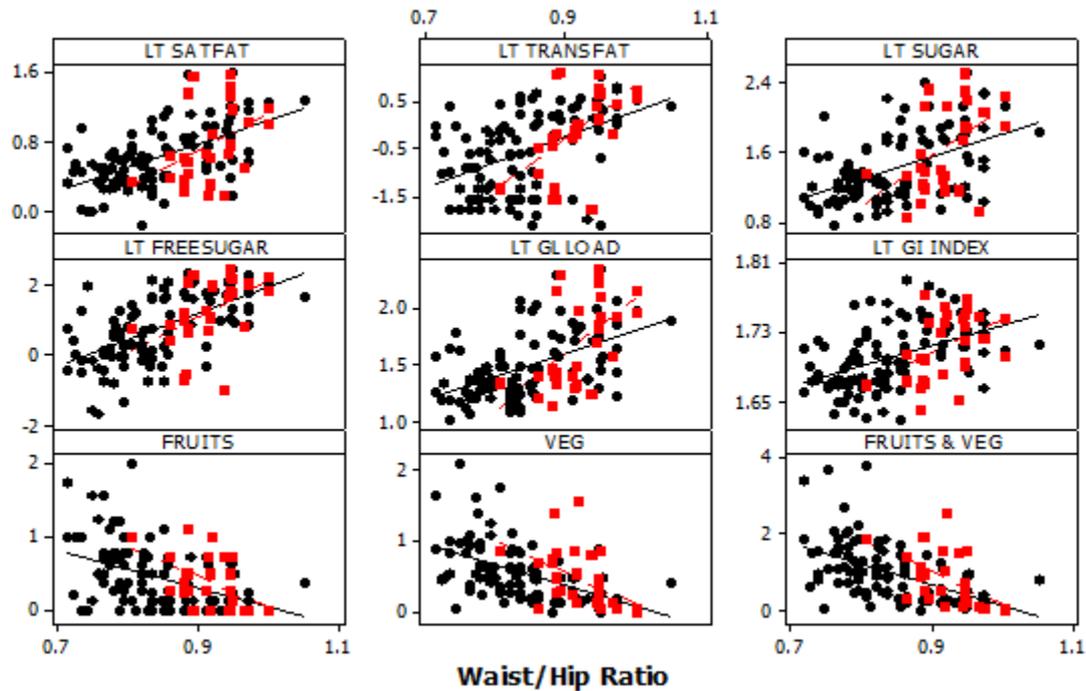
Is there a relationship between dietary consumption of fat, sugar, fruits, and vegetables and anthropometric measurements ?



# Correlations between dietary consumption and BMI

Item	Total	Male	Female
Log <sub>10</sub> Saturated fats intake (g)	.697*	.810*	.674*
Log <sub>10</sub> Trans fats intake (g)	.629*	.802*	.582*
Log <sub>10</sub> Total sugars intake (g)	.612*	.816*	.559*
Log <sub>10</sub> Added sugars intake (g)	.690*	.822*	.655*
Log <sub>10</sub> Average daily glycemic (glucose) load (g)	.664*	.873*	.617*
Log <sub>10</sub> Average daily glycemic (glucose) index (g)	.519*	.493*	.515*
Fruit and juice intake (cup equivalents)	-.455*	-.369*	-.461*
Vegetable intake (cup equivalents)	-.485*	-.401*	-.502*
Total fruit and vegetable intake (cup equivalents)	-.510*	-.411*	-.525*

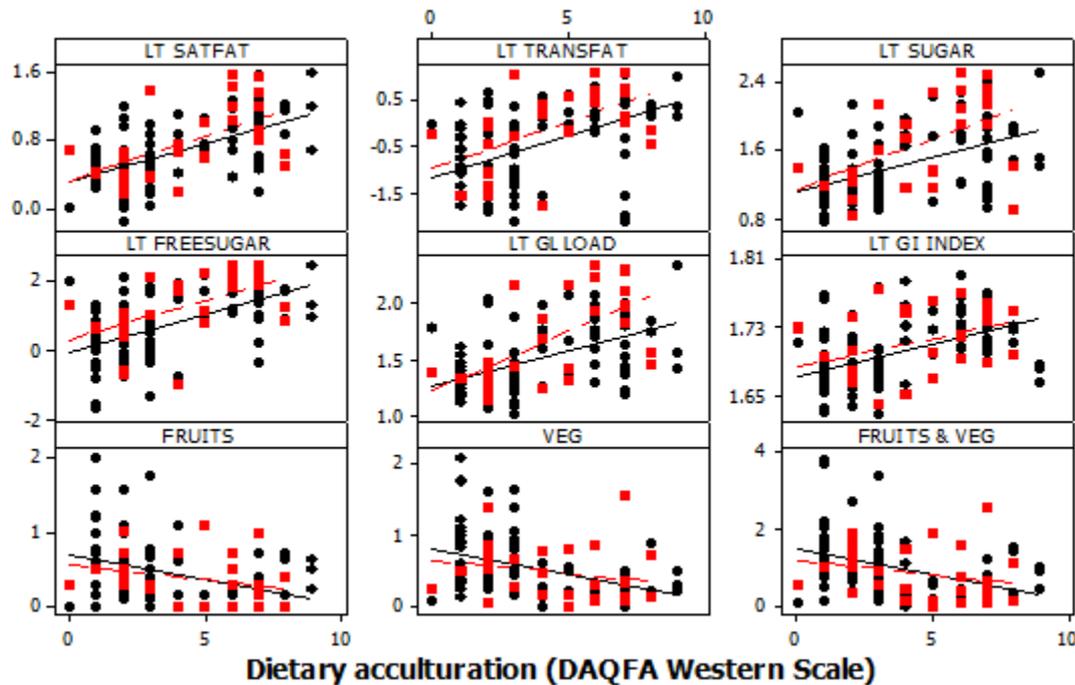
# Relationship between dietary consumption and WHR



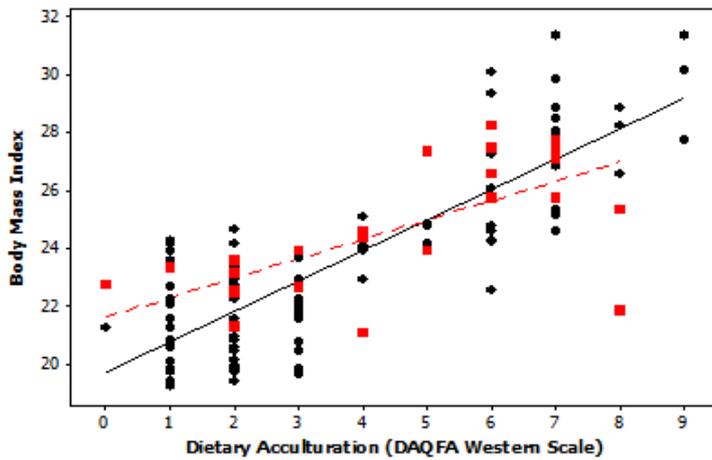
# Correlations between dietary consumption and WHR

Item	Total	Male	Female
Log <sub>10</sub> Saturated fats intake (g)	.560*	.443*	.591*
Log <sub>10</sub> Trans fats intake (g)	.517*	.567*	.471*
Log <sub>10</sub> Total sugars intake (g)	.521*	.489*	.497*
Log <sub>10</sub> Added sugars intake (g)	.609*	.478*	.603*
Log <sub>10</sub> Average daily glycemic (glucose) load (g)	.560*	.562*	.530*
Log <sub>10</sub> Average daily glycemic (glucose) index (g)	.484*	.439*	.486*
Fruit and juice intake (cup equivalents)	-.441*	-.531*	-.441*
Vegetable intake (cup equivalents)	-.490*	-.463*	-.530*
Total fruit and vegetable intake (cup equivalents)	-.506*	-.525*	-.527*

# Is there a relationship between dietary acculturation and dietary consumption of fat, sugar, fruits and vegetables among FAs in US?



# Is there is a relationship between dietary acculturation and anthropometric measurements among FAs in US?



# Correlations between anthropometric and Dietary Acculturation

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	Western Scale	Filipino Scale
Female	.831*	-.583*
Male	.689*	-.654*
Total	.809*	-.642*

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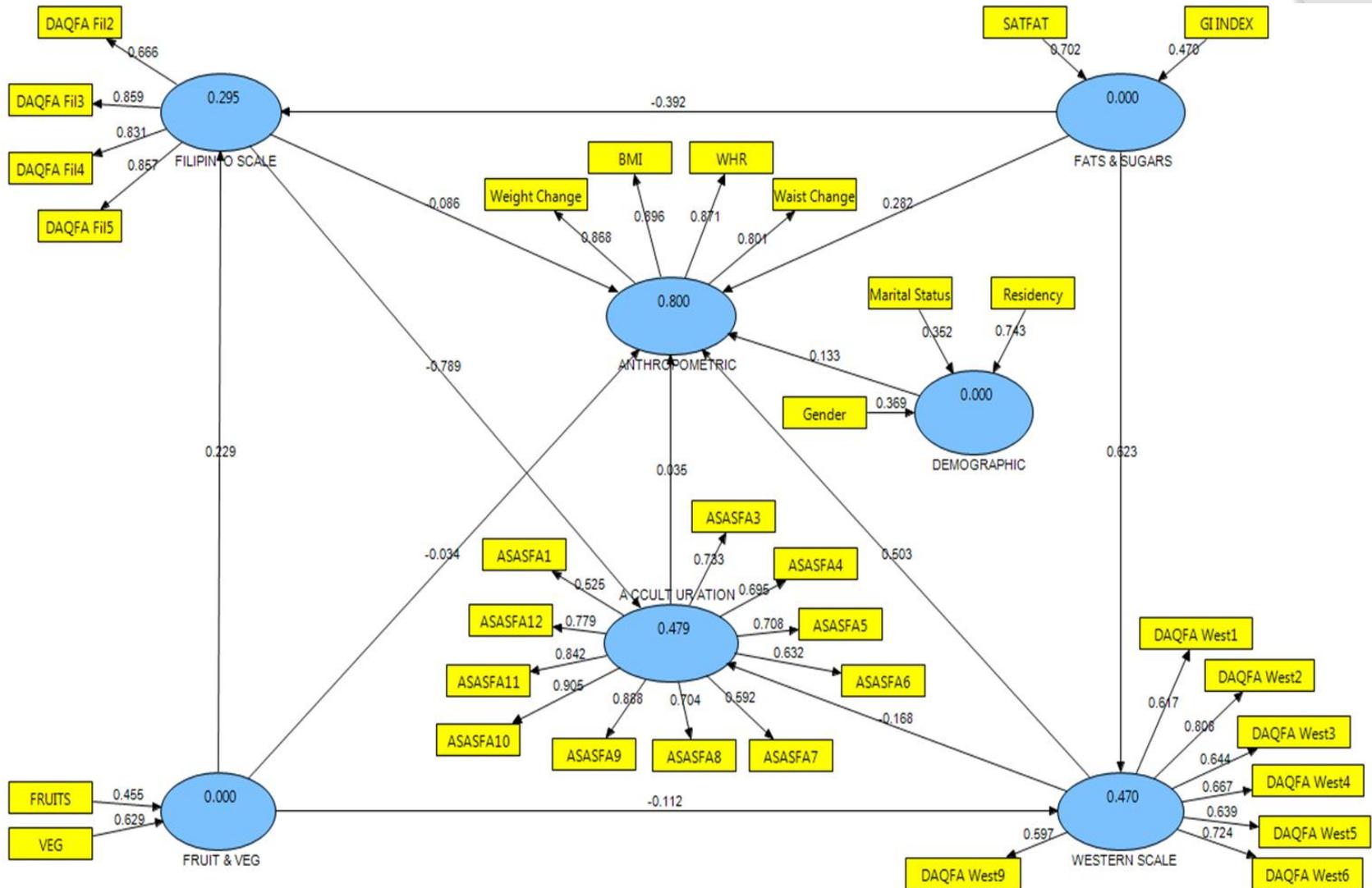
	Western Scale	Filipino Scale
Female	.557*	-.588*
Male	.831*	-.685*
Total	.765*	-.630*

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**BMI and Dietary  
Acculturation**

**WHR and Dietary  
Acculturation**

# Definitive PLS Model



# Discussion

- ① Presence of fast food chains and buffet restaurants
- ① Changes in work demands ↓ food preparation and ↑ accessibility to convenience food
- ① Consumption of fruits and vegetables are lower among FAs
- ① Lack of familiarity to fruits and vegetables
- ① Under or over reporting of food intake

# Demographic, Level of Acculturation and Consumption of FSFV

- ① Less acculturated and yet more preference with American friends
- ① Level of Acculturation negatively correlates with the consumption of fruits and vegetables

# Demographic, Level of Acculturation and Dietary Acculturation

- ⦿ Negative correlation between acculturation and Filipino diet
- ⦿ Media, other sources that emphasize on the availability and affordability
- ⦿ Married participants selected more items in Western scale: are there children involved?
- ⦿ More married men participants selected more Western items than Filipino items

# Consumption of FSFV to Anthropometric Measurements

- Higher BMI/ WHR = Higher consumption of Fat & Sugar
- Participants live in a more Westernized, Southern setting



# Dietary Acculturation and Anthropometric Measurements

- ⦿ Participants' BMI and WHR scores and Western diet are positively correlated
- ⦿ Participants' BMI and WHR scores and Filipino diet are negatively correlated
- ⦿ Typical Filipino diet of rice, one protein and side dishes

# Predictors of Anthropometric Measurements

- Western subscale of DAQFA and consumption of fat and sugar predicted an increase in BMI, WHR, ↑waist, and ↑weight among FAs in this study

# Strengths of the Study

- First to study FAs dietary acculturation
- First to provide evidence of FAs (1<sup>st</sup> generation) preference towards their American peers
- Results of current anthropometric measurements were based on actual measurements rather than self-reported measures
- First to apply PLS path model to nursing science

# Limitations of the Study

- ◎ Findings can not be generalized
  - Small convenience sample
  - High levels of education & moderate income
  - SFFQ is not accurate and not validated to FAs
  - Fruits and vegetables intake were more difficult to measure in FAs
  - Other confounders were not included: physical activity, pre-migration factors, history of smoking

# Implications for Nursing

- ⦿ FAs need greater understanding of food choices→ Healthy People 2020
- ⦿ Less acculturated FA need encouragement to maintain their traditional daily pattern and increase consumption of fruits and vegetables
- ⦿ Nurses and healthcare providers need to offer alternative food options for newly arrived FAs
- ⦿ Nurses and healthcare providers (HCPs) need to consider positive and negative influences of dietary acculturation

# Recommendations for Future Research

- Replicate the study using a larger population to include second generation FAs
- Examine facilitators and barriers of healthy eating among highly acculturated FAs
- Examine perceptions of FAs regarding weight gain, obesity, and obesity-related chronic diseases
- Examine the knowledge and attitude of FAs regarding food purchases and preparation

# Recommendation for Future Research

- ① Refinement of the DAQFA
- ① Examine dietary acculturation and physical activity and their impacts on chronic conditions
- ① Include quantity and quality of food intake before and after immigration to US
- ① Investigate genetic traits, body composition, dietary intake, and activity patterns of FAs

# Conclusions

- Most significant predictors of anthropometric indicators among FAs in NC were acculturation to Western dietary patterns and consumption of fats and sugar using PLS Path Model
- Results can be used in counseling, dietary assessment and education of risk factors associated with Western and traditional food patterns