CAROTENOID LEVELS AND SELF-REPORTED FRUIT AND VEGETABLE INTAKE: DIFFERENCES ACROSS AGE, RACE, SEX AND BMI

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Background

- Carotenoids are phytochemicals that have more than 750 pigments made by plants and are related to a reduction in risk factors for chronic diseases due to their anti-inflammatory & anti-oxidant characteristics.
- Skin carotenoid levels may be assessed by resonance Raman spectroscopy(Veggie Meter™) and has emerged as a biomarker of fruit and vegetable intake.[1]
- Carotenoids absorb wavelengths ranging from 400 to 550 nanometers (violet to green light) (See Fig.2).
- Dietary Guidelines for Americans recommend fruits and vegetables daily to reduce the risk of chronic diseases. [2]

Purpose

- To determine the strength of the correlation between self-reported fruit and vegetable intake using the Short Healthy Eating Index Survey (sHEI) (2) and Veggie Meter™ score.
- To examine correlations among the Veggie Meter™ score and BMI, age, race, sex and self-reported carotenoid supplements.

Methods

- Participants completed the sHEI™ survey to self-report dietary intake habits and food security.
- Participants self-reported height, weight, age, sex, and smoking status into the carotenoid scanner (0-800 scale).[1] (See Fig.2).
- Carotenoid measurements were conducted with the right index finger using a 3-pass method and average score.
- Participants rated future intentions on a scale of 0 - 10 about fruit and vegetable intake after seeing their carotenoid score.
- Nutrition education, dietary recommendations, food insecure food locations and high carotenoid food sources were provided.

Participant Demographics

Ethnicity	**Count**
White American	24 (82.8%)
African American	3 (10.3%)
Hispanic/Latino	1 (3.4%)
Native American	1 (3.4%)
Sex	
Female	24 (83%)
Male	5 (17%)
Age	
18-35	9 (31%)
36-45	5 (17%)
45-80	15 (52%)
Total	29 (100%)

Results and Discussion

- Skin carotenoid levels tended to be higher in younger age groups (18-35) as compared to other age groups (See Fig.1).
- Sex, self-reported carotenoid supplement use, BMI, sHEI score(fruit and vegetable questions), and race were not significantly associated with the carotenoid score (See Table 1).
- BMI and self-reported fruit and vegetable intake was negatively correlated with the carotenoid score (See Fig.4 and 5).
- A regression analysis shows that the carotenoid score was insignificantly associated with participants' future intentions about increasing fruit and vegetable intake.
- Of participants, 7% (2) identified as food insecure and 93% (27) identified as food secure from the validated two-item food security screening tool.[4]

Figure 1

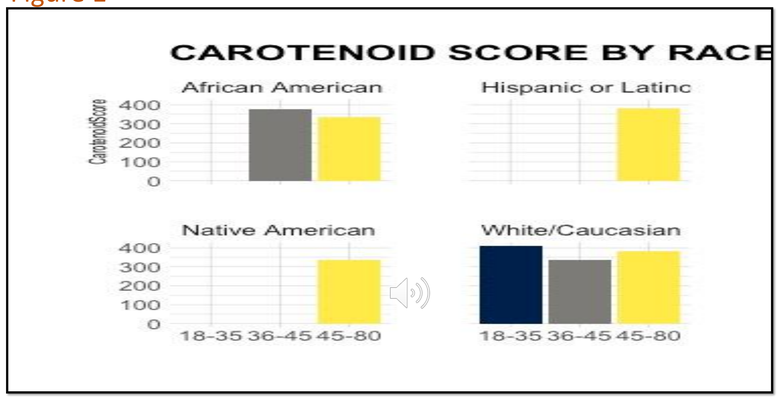


Table 1

Regression Coefficients				
	Estimate	Std. Error	t value	p value
Fruit/Vegetable Consumption	-1.5	4.1	-0.36	0.72
Self-reported carotenoid supplement use	10.1	27.3	0.371	0.71
BMI	-4.3	2.5	-1.7	0.1
Age 36-45	-10.05	39.2	-0.26	0.8
Age 45-80	-15.6	30	-0.52	0.61

Figure 2

Figure 3

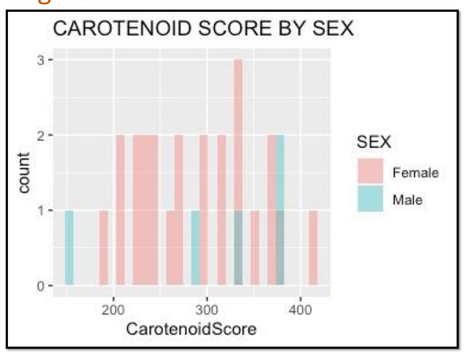


Figure 4

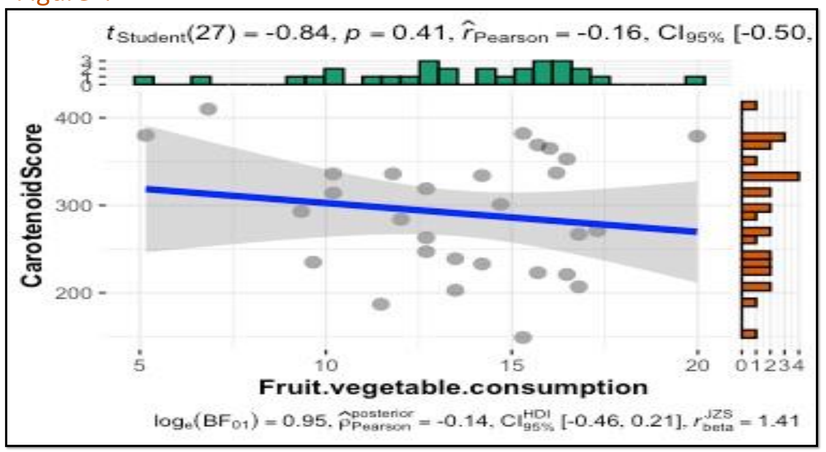
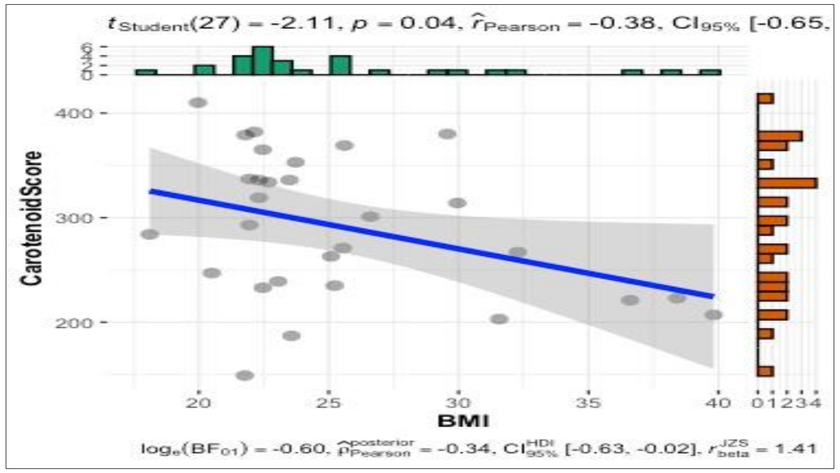


Figure 5



Conclusion and Recommendation

- Results indicates that skin carotenoid levels in a population varies by age groups.
- Self-reported fruit and vegetable intake (sHEI survey) and BMI were both negatively correlated with carotenoid level.
- Ongoing research is needed in larger populations of varying age, sex, BMI and race to determine future intentions about fruit/vegetable intake.

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References

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