FRUVEDomics: A Personalized, Behavioral, Nutritional Intervention to Assess Metabolic and Microbial Changes in College Students

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Introduction

Rates of metabolic syndrome (MetS) have increased in the young adult population (over 5% in ages 20-49)[a], demonstrating an urgency in developing treatment and prevention through lifestyle approaches.

Objective: Investigate the effects of an eight-week nutritional intervention on various health indices in young adults (18-28 years) with MetS and those "at-risk" for MetS.

Screen and Recruit

- The study was completed in two waves: "At-risk" cohort (2014) and MetS cohort (2016).

Educate/Intervene

- 2 hour group education led by a Registered Dietitian Nutritionist (RDN)
- Received a culinary toolkit
- Given a binder of nutrition information.
- Diet was measured by food pictures, receipt inventory and diet logs on a weekly basis by a one-on-one counseling session with the RDN.

Results

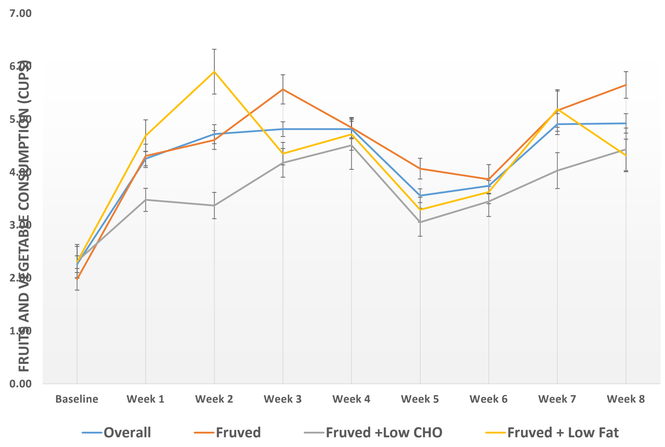
Table 1: Demographics of "At-Risk" Cohort

Variable	Frequency (n=36)	Percent
Race		
White	23	63.9
African American	4	11.1
Hispanic	4	11.1
Asian	4	11.1
Indian/Native American	1	2.8
Sex		
Female	21	58.3
Male	15	41.7
Appalachian Origin		
Appalachian	17	47.2
Not Appalachian	19	52.8
metS Risk Score-Screen		
Low Risk	10	27.8
At Risk	26	72.2
BMI Category		
Underweight	0	0
Healthy	16	44.4
Overweight	14	38.9
Obese	5	13.9
Morbid Obese	1	2.8

Table 2: Demographics of MetS Cohort

Variable	Frequency (n=17)	Percent
Race		
White	13	76.5
African American	3	17.6
Hispanic	0	0
Asian	1	5.9
Indian/Native American	0	0
Sex		
Female	11	64.7
Male	6	35.3
Appalachian Origin		
Appalachian	9	52.9
Not Appalachian	8	47.1
metS Risk Score-Screen		
High Risk	17	100
BMI Category		
Underweight	0	0
Healthy	0	0
Overweight	1	5.9
Obese	3	17.6
Morbid Obese	13	76.5

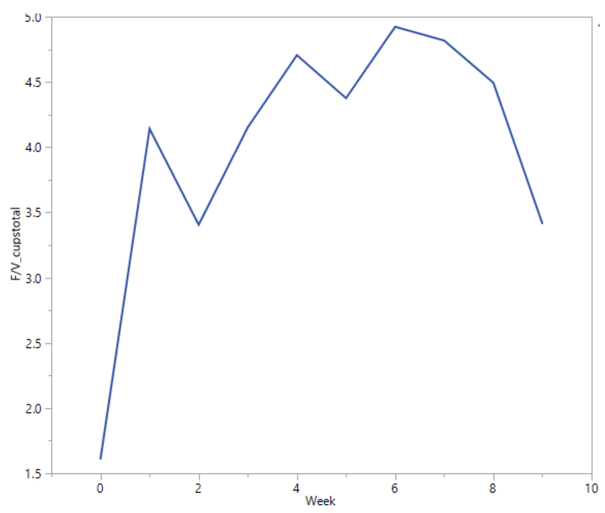
"At-Risk" Cohort: Fruit and Vegetable intake (cups)



Mean fruit and vegetable intake across time was measured using repeated measures ANOVA. Significant effect of intervention group as well as time were observed ($p<0.0001$) from baseline (mean of 2.5 cups) to post-assessment (mean of 5.2 cups).

MetS Cohort: Fruit and Vegetable intake (cups)

Mean fruit and vegetable intake across time. Repeated measures ANOVA found a significant increase ($p< 0.0001$) in fruit and vegetable intake from baseline (mean of 1.6 cups) and post-assessment (mean of 3.4 cups)



Conclusions

Preliminary findings of the "at-risk" cohort illustrated

- Improved metabolic health
- Changes in the metabolome and microbiome were found
- Results indicating less inflammation, therefore reducing risk of disease.

FRUVEDomics
fruits + vegetables + omics

Preliminary findings of the MetS cohort indicate:

- Significant increases in fruit and vegetable intake.
- Greater lean body mass
- Further investigation is being conducted on the blood analysis and microbiome.

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