Relationship Between Dietary Quality and Cardiometabolic Risk in a College Population

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Introduction

- Early adulthood plays a key role in the development of healthy eating habits, however, the association between dietary indices and cardiometabolic risk is not well investigated in younger adults[1]
- Metabolic syndrome (MetS) is a measure of risk factors for chronic disease. Research has shown that any students aged 18-24 meet one or more risk factors for cardiovascular disease and MetS[2-4]

Objective

To assess diet quality and its relationship with cardiometabolic risk in a northeastern college population.

Methods

- Data were collected at a northeastern university from a 3-day recall (Diet and Wellness+) in the College Health and Nutrition Assessment Survey (CHANAS)[4]
- A modified Healthy Eating Index (mHEI) score was assigned (0-100) based on HEI-2005, -2010, and -2015 categories to assess the diet quality of college students based on the Dietary Guidelines for Americans
- After excluding cases with missing data and stratifying for sex, mHEI scores were grouped into quartiles
- Chi-square analyses assessed the relationship between ascending mHEI quartiles (Q1-4) with the prevalence of metabolic syndrome (MetS) and individual MetS criteria
- Students provided informed consent (UNH IRB #5524)

Results

- The final sample (n=6,214) of students included mostly first- or second-year students (85%) but only 6% were nutrition majors (n=455)
- About a third (29%) of students met 1 criterion for MetS and 14.5% met ≥2 (n=1,167)
- More men than women met 1 or 2 MetS criteria (43.3% vs. 35.5%, 17.1% vs. 12.9%, respectively, both $p < .001$).
- Mean mHEI score was 64.4±12.6
- Participants in mHEI Q1 vs. Q4 were more likely to meet ≥2 MetS criteria (22.7% vs. 15.0%, $X^2=30.0$, p< 0.0001)
- A greater proportion of mHEI Q1 v. Q4 met the criteria for fasting plasma glucose (7.4% v. 4.0%, $X^2=29.0$, p< 0.001) and blood pressure (22.8% v. 19.1%, $X^2=8.8$, $p=0.04$)

Metabolic Syndrome (MetS) Criteria

Fasting Plasma Glucose (FPG)	Waist Circumference (WC)	High Density Lipoprotein (HDL)	Blood Pressure (BP)	Triglycerides (TG)
>100 mg/dL	Women: >88.9 cm Men: >101.6 cm	Women: <50 mg/dL Men: <40 mg/dL	>130/85 mmHg	>150 mg/dL

Modified Healthy Eating Index (mHEI)

Dietary Component	Maximum+	Minimum++	Total Possible Points
Total Fruit (cup equivalents)	≥0.8	0	10
Total Vegetables (cup equivalents)	≥1.1	0	10
Meat and Beans (oz equivalents)	≥2.5	0	10
Total Grains (oz equivalents)	≥3.0	0	10
Fatty Acids ((PUFAs + MUFAs)/SFAs))	≥2.5	≤1.2	10
Dairy (cup equivalents)	≥ 1.3	0	10
Moderation Components+++			
Sodium (grams)	≤1.1	≥2.0	10
Saturated Fat (% total kcal)	≤8	≥16	10
Empty calories(% of total kcal)	≤19	≥ 50	20
Total			100

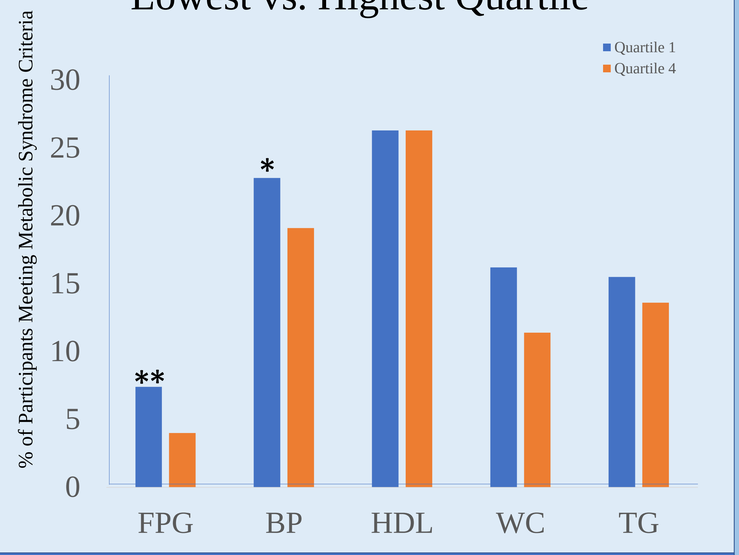
+Standard for Maximum Score (per 1,000 kcal)
++Standard for Minimum Score (per 1,000 kcal)
+++Reverse-Scored

Key Findings

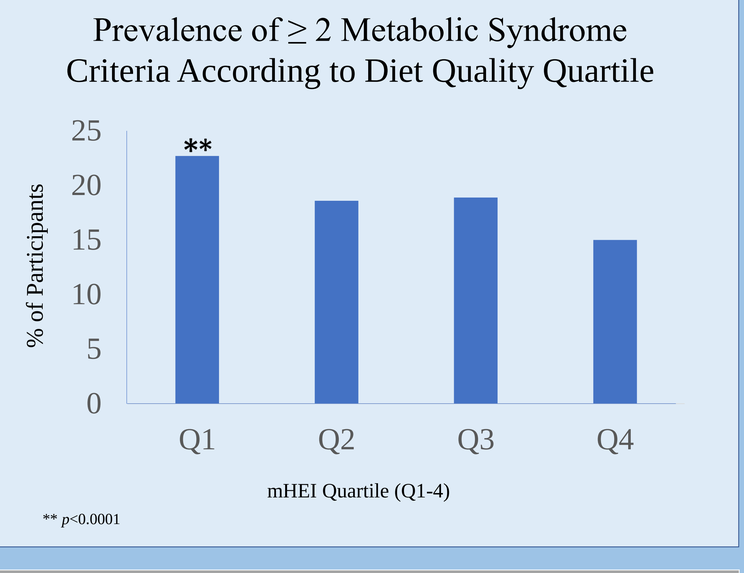
- Students with the healthiest diets met fewer MetS risk criteria than students with the least healthy diets
- Students with less healthy diets more frequently met fasting plasma glucose and blood pressure risk criteria

Conclusion

Findings support a relationship between dietary quality and MetS in a college population suggesting a need for early disease prevention via dietary habits of young adults.



FPG = Fasting Plasma Glucose, BP = Blood Pressure (systolic and diastolic). HDL = High-Density Lipoprotein, WC = Waist circumference , TG = Triglycerides, *$p<0.04$, **$p<0.0001$



** $p<0.0001$

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