

Adherence to the Mediterranean Diet is Associated with Lower Pericardial Fat in African Caribbean Men

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Introduction

- Ectopic fat is a novel risk factor of cardiometabolic diseases independent of traditional risk factors
- Adherence to a Mediterranean-style diet pattern has been associated with altered fat distribution among US adults
- Caribbean populations likely have different dietary intake compared to American populations
- No studies to date on relationship between Mediterranean Diet adherence with muscle fat

Question: Is adherence to a Mediterranean-style Dietary Pattern related to ectopic fat distribution in African Caribbean men?

Methods

- Study Participants: Tobago Health Study
 - Longitudinal study of prostate cancer and body composition with multiple visits. Men aged 40+ years, predominantly of West African ancestry and recruited without regard to their health status
 - Data for this analysis is cross-sectional analysis from most recent visit (2014-2017, N=856)



- Diet collected using 146-item monthly Food Frequency Questionnaire¹
 - Nutritional information obtained from USDA SR28 Database
 - Excluded N=12 missing diet questionnaire, N=13 for missing ≥ 10% food items and N=32 for extreme energy <600 kcal or >5,000 kcal.
 - Final analysis for diet score construction in N=799
- Alternative Mediterranean Diet (aMED) Score (Range 0-9)
 - +1 for intake at or above the population median for fruits, vegetables, whole grains, nuts, legumes, fish, and monounsaturated:saturated fat ratio
 - +1 for intake below the population median for red and processed meats
 - +1 for alcohol intake between 10-25 grams per day
- Computed Tomography (CT) scans of chest, abdomen, and thighs performed in subset of participants (N = 707)
 - Subcutaneous Adipose Tissue (SAT), Visceral Adipose Tissue (VAT), Pericardial Adipose Tissue (PAT), Liver Fat, and Intermuscular Fat (thigh, psoas, and paraspinus)
- Lifestyle obtained from interviewer-administered questionnaire. Body mass index (BMI) and waist circumference (WC) obtained in clinic. Insulin Resistance (HOMA-IR) estimated from fasting serum glucose and insulin measures.

Statistics

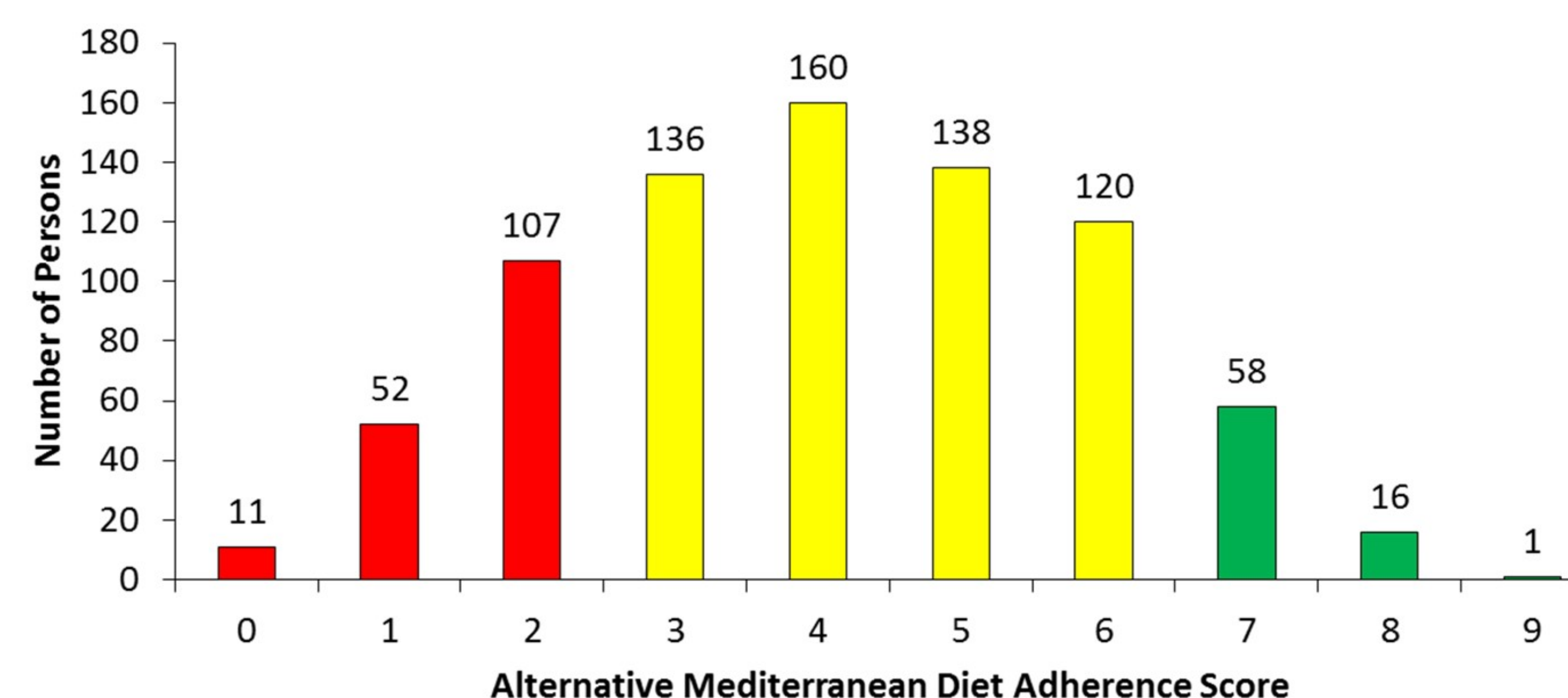
- Multiple linear regressions were performed
 - Outcome: Ectopic fat depot
 - Primary Predictor: aMED adherence score
 - Covariates: total energy intake, age, BMI, hours walked per week, sedentary ≥ 14 hours per week, smoking status, lipid-modifying medications, and self-reported dietary modification for health reasons.
 - BMI not included in models for SAT or waist circumference
- Adherence scores categorized as Low (0-2), Medium (3-6) and High (7-9) for display, but analyzed as continuous variable
- Ectopic fat depots were transformed to be normalized
- Liver fat analyzed in individuals with 2 or less drinks per day

Results

Study Population Characteristics of Follow-up Exam 2

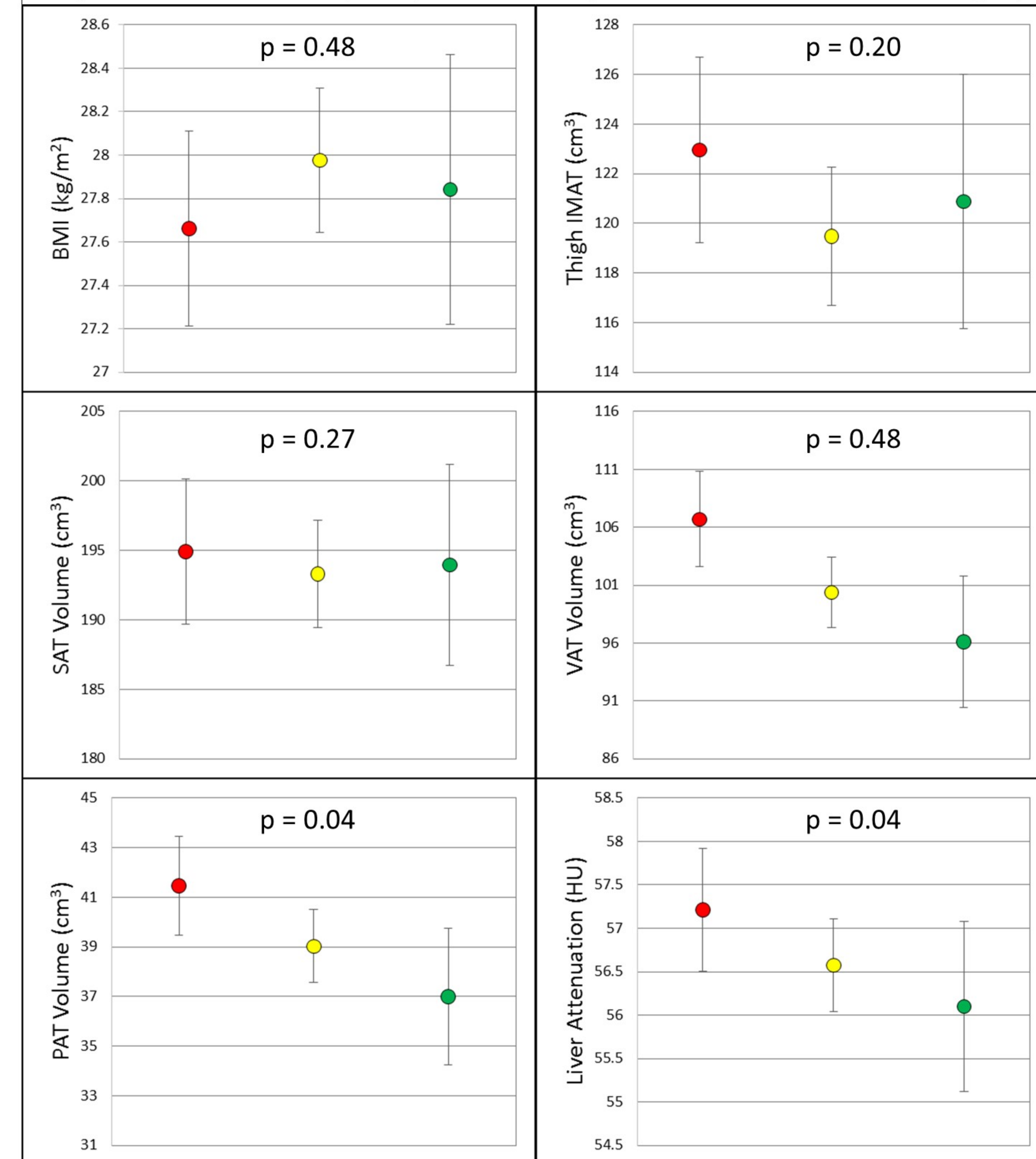
Variable	Full Study Visit (N=856)	Diet and CT Subset (N=707)	p
Age (years)	64.2 (8.9)	64.0 (8.7)	0.54
BMI (kg/m ²)	27.6 (4.6)	27.7 (4.7)	0.14
Waist Circumference (cm)	98.4 (12.8)	98.6 (12.7)	0.33
Systolic Blood Pressure (mmHg)	142.3 (22.7)	141.7 (22.2)	0.14
Diastolic Blood Pressure (mmHg)	79.4 (12.3)	79.3 (12.2)	0.33
HOMA-IR	3.0 (3.2)	3.1 (3.3)	0.79
Walked/Week (hours)	3.1 (4.3)	3.1 (4.2)	0.50
Hypertension (%)	537 (62.7)	439 (62.1)	0.46
Diabetes (%)	200 (23.6)	171 (24.3)	0.33
Self-report Good/Excellent Health (%)	802 (94.0)	662 (93.9)	0.85
Sedentary ≥ 14 Hours/Week (%)	609 (71.1)	501 (70.9)	0.77
Never Smoker (%)	609 (71.2)	500 (70.7)	0.55
Former Smoker (%)	178 (20.8)	152 (21.5)	0.32
Current Smoker (%)	68 (8.0)	55 (7.8)	0.74
Lipid-modifying Drugs (%)	118 (13.8)	97 (13.7)	0.90
Modified Diet for Health Reasons (%)	279 (32.6)	231 (32.7)	0.64

Individuals by aMED Score



Results (Continued)

Adjusted Means of Adiposity Measures by aMED Diet Adherence Category



* P-values shown are for continuous linear regression models.

Conclusions

- Adherence to the aMED Dietary Pattern is associated with decreased pericardial fat and, in contrast, increased liver fat
- aMED Dietary Pattern adherence not associated with other intermuscular fat (not shown) or with measures of general or central fat
- Differences from our findings compared to US populations may be due to differences in:
 - Scoring of Mediterranean Dietary Pattern adherence
 - Dietary intake between USA and Tobago
 - Food frequency questionnaires
 - Model covariates
- Significance: Following a Mediterranean Dietary Pattern may have differential effects on ectopic fat depots

Acknowledgements and References

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Reference: 1. Ramdath DD, Hilaire DG, Cheong KD, Sharma S. Dietary intake among adults in Trinidad and Tobago and development of a quantitative food frequency questionnaire to highlight nutritional needs for lifestyle interventions. Int J Food Sci Nutr. 2011 Sep;62(6):636-41. doi: 10.3109/09637486.2011.572545. Epub 2011 May 18.