Cross-sectional analysis of dietary patterns, ASCVD risk, and measures of vascular resistance

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Background

Most studies of dietary patterns and health focus on diets that are protective against development of disease incidence or progression. The Healthy Eating Index (HEI) is a recommended dietary pattern promoted by the USDA to improve health outcomes on a public health scale. It is a measure of dietary alignment with the Dietary Guidelines for Americans. In addition to global dietary pattern studies, there are focused nutritional intervention randomized control trials that measure the molecular impact of specific foods and nutrients on detailed evaluation of cardiovascular health. The goal of this study was to combine the detailed cardiovascular assessment with an evaluation of participant's baseline dietary patterns.

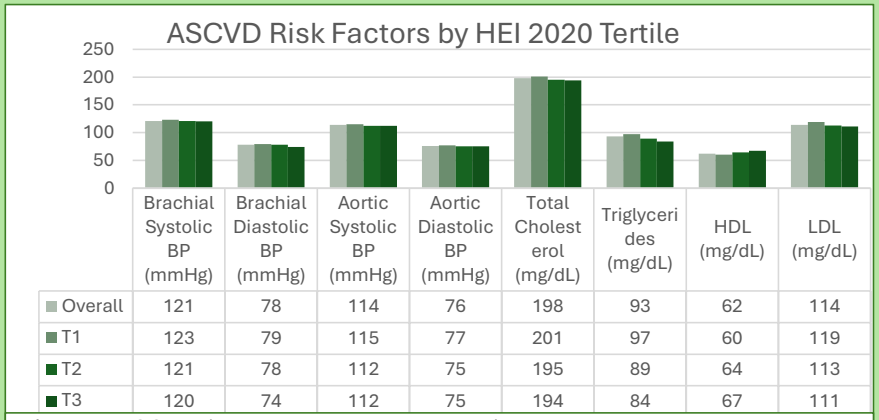
Methods

- Auto Self-Administered 24 Hour (ASA24) dietary recall data was collected
- Measures of cardiovascular health taken at baseline: BMI, aortic and brachial blood pressures, lipid panel, HbA1c%
- Measures of vascular stiffness: augmentation index, pulse wave velocity
- R program dietaryindex to calculate HEI scores from ASA24 data
- Assessed measures of cardiovascular health by HEI score tertile

Results

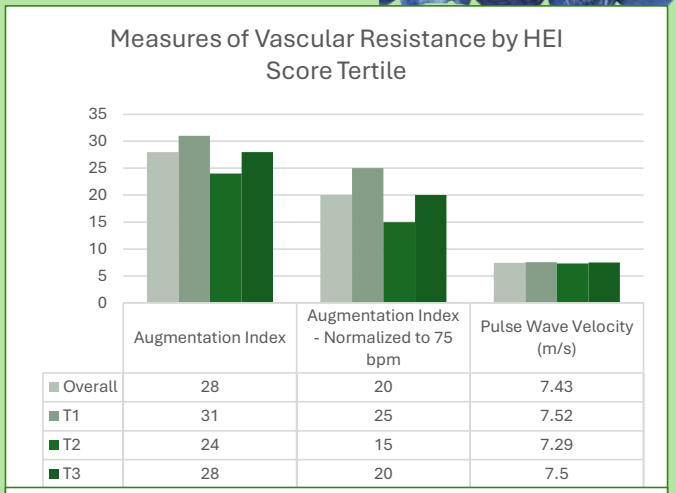
Table 1. Demographics and HEI score by tertile

	Overall (N=138)	T1 (N=45)	T2 (N=46)	T3 (N=47)	p-value
Sex					>0.9
Female	92 (67%)	29 (64%)	31 (67%)	32 (68%)	
Male	46 (33%)	16 (36%)	15 (33%)	15 (32%)	
Age	57 (49, 62)	59 (48, 62)	54 (43, 60)	59 (54, 64)	**0.035**
BMI	24.5 (23.2, 28.0)	27.1 (23.7, 31.2)	25.5 (23.2, 28.2)	23.8 (22.5, 25.7)	**0.005**
Family Hx of CVD					
Unknown	75 (54%)	26 (58%)	20 (43%)	29 (62%)	
No	42 (30%)	9 (20%)	18 (39%)	15 (32%)	
Yes	21 (15%)	10 (22%)	8 (17%)	3 (6.4%)	
HEI Score	63 (12)	49 (7)	63 (3)	76 (5)	**<0.001**



	Brachial Systolic BP (mmHg)	Brachial Diastolic BP (mmHg)	Aortic Systolic BP (mmHg)	Aortic Diastolic BP (mmHg)	Total Cholesterol (mg/dL)	Triglycerides (mg/dL)	HDL (mg/dL)	LDL (mg/dL)
Overall	121	78	114	76	198	93	62	114
T1	123	79	115	77	201	97	60	119
T2	121	78	112	75	195	89	64	113
T3	120	74	112	75	194	84	67	111

Figure 1. ASCVD risk factors by HEI score tertile



	Augmentation Index	Augmentation Index - Normalized to 75 bpm	Pulse Wave Velocity (m/s)
Overall	28	20	7.43
T1	31	25	7.52
T2	24	15	7.29
T3	28	20	7.5

Figure 2. Measures of vascular resistance by HEI score tertile

Conclusion

Mildly lower BMIs were seen in groups with higher HEI scores, representing greater adherence to the Dietary Guidelines for Americans. There were no other CVD risk factors or measures of vascular resistance that corresponded with greater HEI scores based on the 138 participants included here. Additional recruitment is needed to evaluate if there are measurable differences and consider confounding variables.

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Slide 1

SJ1 What is the axis supposed to be on the left side of each graph? Please fix

Sarah Ardanuy Johnson, 2025-11-11T01:06:47.014