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## Abstract

**Introduction:** Limited research in Puerto Rico indicates suboptimal diet quality among residents, which is concerning due to its potential cardioprotective effects. Data on diet quality and its correlation with cardiometabolic risk factors in young adults is lacking. Therefore, our study aimed to investigate the associations between diet quality and cardiometabolic risk factors in young adults.

**Methods:** This cross-sectional analysis included 2,170 adults (18-29 y, 61% women) who provided complete data on questionnaires, physical exams, and laboratory assays as part of the PR-OUTLOOK study. Diet quality scores, evaluated using the Dietary Approaches to Stop Hypertension (DASH) scale (range: 8-40), were converted to z-scores for standardization. Cardiometabolic risk factors included body mass index (BMI), waist circumference (WC), total cholesterol, high-density and low-density lipoprotein cholesterol (HDL-C and LDL-C), triglycerides, systolic and diastolic blood pressure (SBP and DBP), fasting glucose, hemoglobin A1c (HbA1c), and high-sensitivity C reactive protein (hs-CRP). The relationship between DASH z-scores and each cardiometabolic risk factor was analyzed using robust linear regression, adjusting for age, sex, education, marital status, subjective social status, physical activity, and smoking.

**Results:** The mean DASH score was 24.0±4.6. DASH scores showed a positive association with HDL-C ( $\beta=0.6$ ,  $P=0.008$ ) and negative associations with BMI ( $\beta=-0.4$ ,  $P=0.006$ ), WC ( $\beta=-1.1$ ,  $P<0.001$ ), LDL-C ( $\beta=-1.4$ ,  $P=.011$ ), fasting glucose ( $\beta=-0.5$ ,  $P=0.015$ ), HbA1c ( $\beta=-0.02$ ,  $P=0.003$ ), and hs-CRP ( $\beta=-0.01$ ,  $P=0.016$ ).

**Conclusion:** Young adults had low adherence to the DASH dietary pattern, which was associated with cardiometabolic risk. These findings highlight the importance of adopting a healthy dietary pattern in early adulthood.

## Introduction

### Background

- ❖ Young adults aged 18-29 in Puerto Rico have a high prevalence of overweight (29%) and obesity (28%)<sup>1</sup>.
- ❖ Limited research in PR indicates suboptimal diet quality among residents<sup>2-4</sup>, which is concerning due to its potential cardioprotective effects.
- ❖ Data on diet quality and its correlation with cardiometabolic risk factors in young adults are lacking.

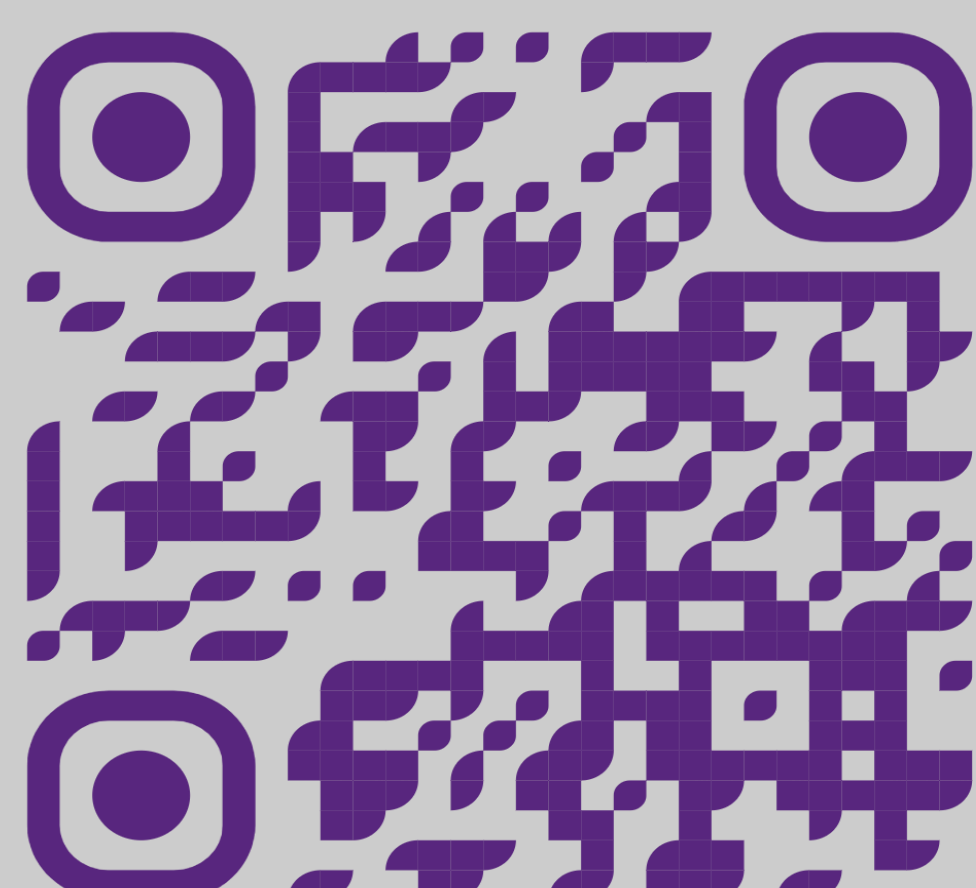
### Objectives

- ❖ Our study aimed to examine the associations between diet quality and cardiometabolic risk factors in young adults.

## IRB

The study was approved by the UPR-MSU Institutional Review Board (protocol #2290033724A008).

## References



## Methodology

### Data source

- ❖ Cross-sectional analysis of PR-OUTLOOK baseline data collected between September 2020 and November 2023.
- ❖ 2,170 Puerto Rican adults aged 18-29 completed all study procedures.

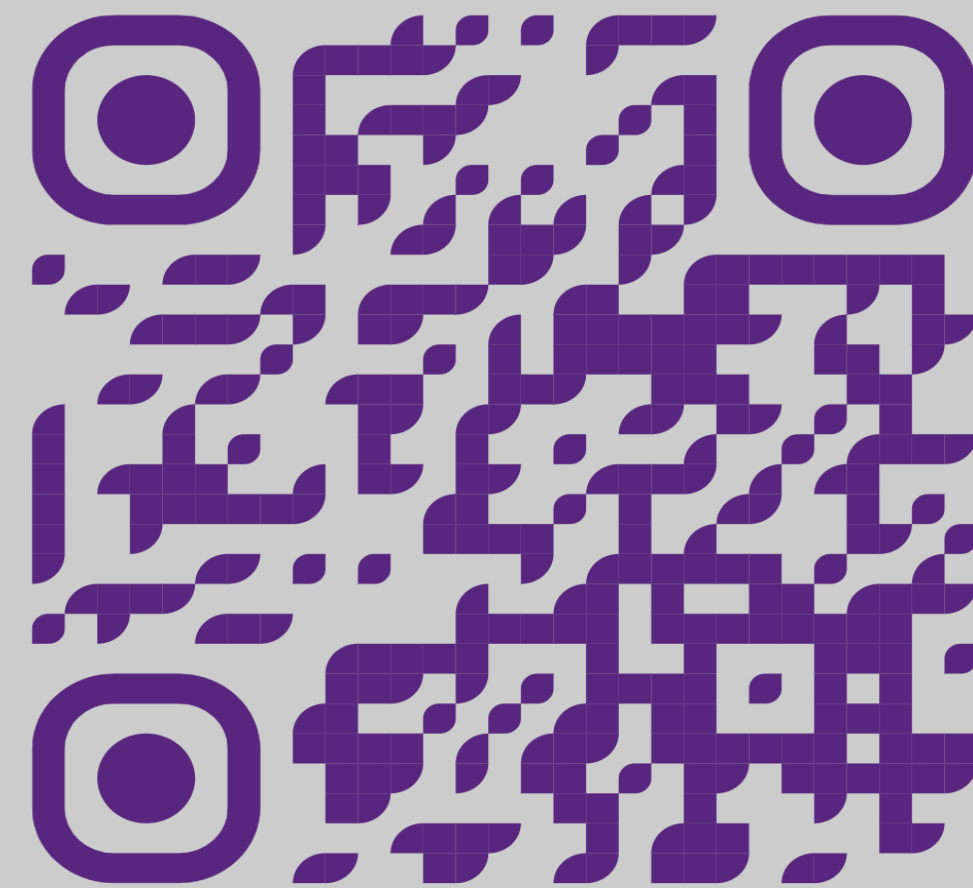
### Measures

- ❖ **Exposure:** Diet quality
  - Dietary intake in the past 12 months was self-reported using an adapted and validated food frequency questionnaire for Puerto Rico.
  - Diet quality was assessed using the Dietary Approaches to Stop Hypertension (DASH) score, calculated based on intake of the 8 key food groups and nutrients.
    - Range: 8 (minimum adherence) to 40 (maximum adherence).
- ❖ **Outcome:** Cardiometabolic risk factors
  - Body mass index, waist circumference, total cholesterol, triglycerides, high-density and low-density lipoprotein cholesterol, fasting blood glucose, hemoglobin A1c, insulin, high-sensitivity C reactive protein, and blood pressure.
- ❖ **Covariates:** Age, sex, education, marital status, subjective social status (MacArthur scale), physical activity, smoking, and vaping.

### Statistical analysis

- ❖ Chi-square tests and Student's t-tests were used to compare binary and continuous variables by DASH categories.
- ❖ DQ scores were converted to z-scores for standardization.
- ❖ The relationship between DASH z-scores and each cardiometabolic risk factor was analyzed using robust linear regression, adjusting for covariates.

## PDF



## Results

**Table 1.** Baseline characteristics by DASH categories among young adults in Puerto Rico, PR-OUTLOOK 2020-2023 (n=2,170)\*

	DASH > 24 (n = 973)	DASH ≤ 24 (n = 1,197)	P value
	n (%)	n (%)	
Age, y	22.2 ± 3.0	23.1 ± 3.2	<0.001
Female sex	727 (60.7)	601 (61.8)	0.623
High school education or less	468 (39.1)	281 (28.9)	<0.001
Not married	1,059 (88.5)	836 (85.9)	0.076
Subjective social status (range: 1-10)	5.1 ± 1.6	5.2 ± 1.6	0.132
Physical activity <150 min./wk.	794 (66.3)	514 (52.83)	<0.001
Current smoking	54 (4.5)	29 (3.0)	0.177
Current vaping	328 (27.4)	240 (24.7)	0.203

\*Data are presented as mean±SD or n(%).

**Table 2.** DASH component scores among young adults in Puerto Rico, PR-OUTLOOK 2020-2023 (n=2,170)

Dash score component	Unit	Mean ± SD
Fruits	servings	2.97 ± 1.40
Vegetables	servings	2.98 ± 1.40
Nuts and legumes	servings	2.98 ± 1.41
Whole-grain products	servings	3.00 ± 1.41
Low-fat dairy products	servings	2.99 ± 1.41
Sodium	milligrams	3.00 ± 1.41
Red and processed meats	servings	3.01 ± 1.41
Sweetened beverages	servings	3.04 ± 1.41
Total score	points	24.0 ± 4.6

**Table 3.** Robust linear regression models for cardiometabolic risk factors as a function of DASH z-scores among young adults in Puerto Rico, PR-OUTLOOK 2020-2023 (n=2,170)

	$\beta$	95% CI	P value
Body mass index, kg/m <sup>2</sup>	-0.4	-0.6, -0.1	0.010
Waist circumference, in.	-1.1	-1.7, -0.5	0.001
Total cholesterol, mg/dl	-1.2	-2.4, 0.0	0.056
Triglycerides, mg/dl	-0.9	-2.4, 0.5	0.210
HDL cholesterol, mg/dl	0.6	0.1, 1.0	0.014
LDL cholesterol, mg/dl	-1.6	-2.7, -0.6	0.003
Fasting blood glucose, mg/dl	-0.6	-1.0, -0.2	0.008
Hemoglobin A1c, %	-0.02	-0.04, -0.01	0.002
Insulin, $\mu$ U/mL	-0.2	-0.5, 0.2	0.379
High-sensitive C reactive protein, mg/dl	-0.01	-0.01, -0.0	0.005
Systolic blood pressure, mm Hg	0.03	-0.39, 0.47	0.862
Diastolic blood pressure, mm Hg	-0.2	-0.6, 0.1	0.221

## Conclusion

- ❖ Young adults had low adherence to the DASH dietary pattern, a finding consistent with previous studies among middle-aged and older adults in Puerto Rico.<sup>2-5</sup>
- ❖ Higher adherence to the DASH dietary pattern was positively associated with HDL cholesterol and inversely associated with general and abdominal obesity, LDL cholesterol, fasting blood glucose, hemoglobin A1c, and high-sensitive C reactive protein, aligning with findings from other studies among Hispanic adults aged 18-74 in the US.<sup>5</sup>
- ❖ These findings indicate the cardioprotective benefits of adopting a healthy dietary pattern in early adulthood.
- ❖ Future longitudinal studies and clinical trials are needed to confirm the protective effects.

## Funding

- ❖ This research was supported by the National Heart, Lung, and Blood Institute (grant R01HL149119). The study also received partial support from The Hispanic Alliance for Clinical and Translational Research funding awarded through the National Institute of General Medical Sciences (grant U54GM133807).