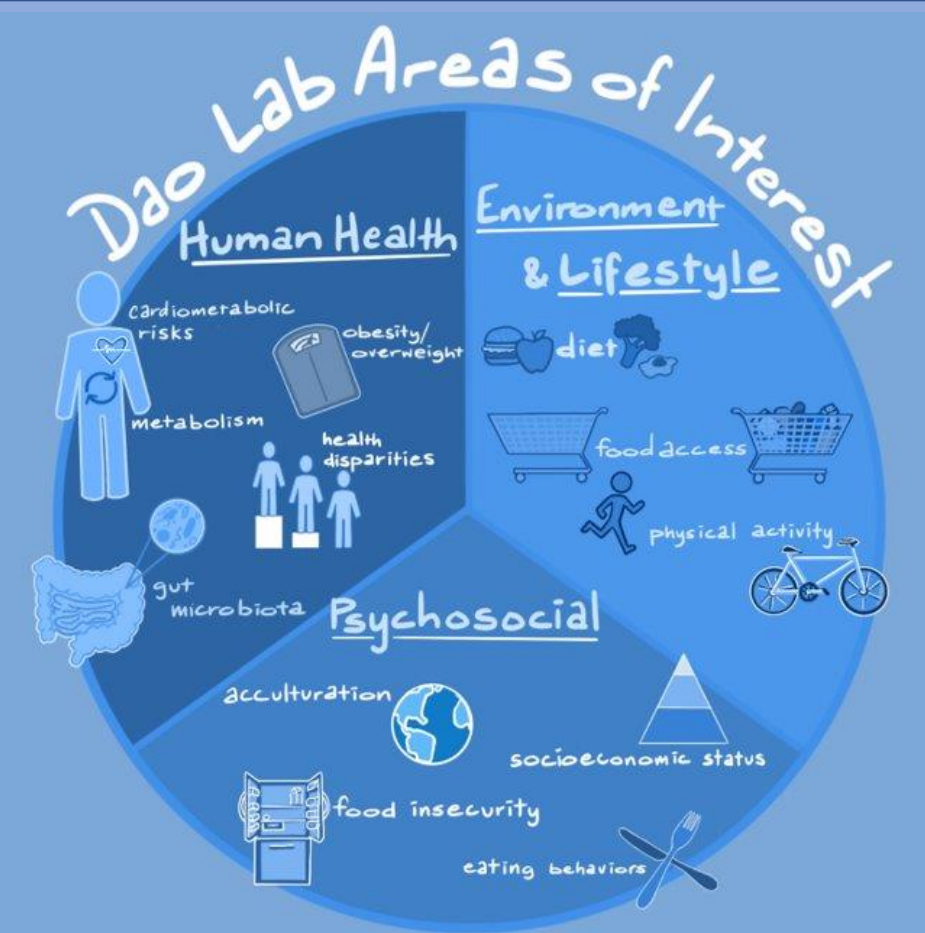


Relationship between physical activity level, dietary fiber, and gastrointestinal symptoms in the NH Hispanic / Latino population

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BACKGROUND

- ❖ **Hispanic/Latino populations** in the US are at higher risk for **chronic disease**.^{1,2}
- ❖ Hispanic / Latino population in New Hampshire grew 49% from 2010 to 2020.³
- ❖ Meeting the World Health Organization (WHO) guidelines of **physical activity level (PAL)** of **600 MET min/week** is associated with lower chronic disease risk.⁴
- ❖ Meeting **dietary guidelines for fiber intake** is associated with better management of, and lower risk of developing, chronic disease.^{1,2,5}
- ❖ **Gastrointestinal (GI) symptoms** have been correlated with lower quality of life (QoL) and higher chronic disease risk.^{2,5}
- ❖ **Research gap:** The relationship between PAL, diet, and GI symptoms has not yet been characterized in Hispanic/Latino populations.

Figure 1. Countries of origin of study population



OBJECTIVES

- ❖ **Objective 1:** Quantify the differences in GI symptoms and intake of fiber rich foods according to WHO PAL guidelines in New Hampshire Hispanic / Latino adults.
- ❖ **Objective 2:** Quantify the relationship between intake of fiber rich foods and GI symptoms in New Hampshire Hispanic / Latino adults.

METHODS

- ❖ Cross sectional study (n=130) on Hispanic/Latino adults (18+) in NH.
- ❖ Data collected using Qualtrics.
- ❖ Surveys via telephone interview with a bilingual medical interpreter in either English or Spanish.
- ❖ Questionnaires: Global Physical Activity Questionnaire (GPAQ), Dietary Screener Questionnaire (DSQ), Gastrointestinal Symptoms Rating Scale (GSRS), and a Demographic Survey developed by the Dao Lab.
- ❖ R version 4.2.1 used for all statistical analysis (t-tests, Wilcoxon tests, Spearman correlations, Benjamini Hochberg adjustment).

Moderate intensity activity → MET value of 4

Vigorous intensity activity → MET value of 8

$$\text{Weekly MET min} = [(\text{weekly minutes of physical activity}) \times (\text{MET value})]$$

RESULTS

Table 2. Demographics and disease of population

	< 600 MET min/week		≥ 600 MET min/week		P- value
	N	Mean ± SD % of group Median [IQR]	N	Mean ± SD % of group Median [IQR]	
Age	82	48.16 ± 14.73	48	43.50 ± 13.71	0.077
Sex					
Male	13	16%	12	25%	
Female	69	84%	36	75%	
Origin					
Dominican Republic	45	55%	22	46%	
Puerto Rico	23	28%	2	4%	
Mexico	4	5%	4	8%	
Other*	10	12%	13	27%	
BMI	78	28.2 ± 4.4	45	29.9 ± 6.1	0.151
Risk factors	82	1.0 [1.0]	48	0.5 [1.0]	0.523
Cardiomatabolic	82	0.0 [0.0]	48	0.0 [0.0]	0.605
Work MET	82	0.0 [0.0]	48	210 [2040]	<0.0001
Recreation MET	82	0.0 [0.0]	48	850 [1410]	<0.0001
Travel MET	82	0.0 [0.0]	48	0.0 [0.0]	0.859
Vigorous MET	82	0.0 [0.0]	48	360 [1590]	<0.0001
Moderate MET	82	0.0 [30.0]	48	720 [1110]	<0.0001

Analysis via two sample t-test (normally distributed variables) or Wilcoxon rank sum test.
*Colombia, Ecuador, Peru, Argentina, Chile, El Salvador, Honduras, and Venezuela.
Risk factors = Number of conditions out of prediabetes, hypertension, high triglycerides, high cholesterol
Cardiomatabolic = Number of conditions out of type 2 diabetes, coronary heart disease, congestive heart failure, pulmonary embolism, stroke

Table 4. GI symptoms scores by PAL

Score (range)	< 600 MET min/week		≥ 600 MET min/week		P-value
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	
Reflux (1-7)	1.0 [0.8]	1.0 [0.8]	1.0 [0.8]	1.0 [0.8]	0.692
Abdominal pain (1-7)	1.0 [0.5]	1.0 [0.5]	1.0 [0.6]	1.0 [0.6]	0.419
Indigestion (1-7)	1.4 [0.8]	1.4 [0.8]	1.4 [1.1]	1.4 [1.1]	0.478
Diarrhea (1-7)	1.0 [0.0]	1.0 [0.0]	1.0 [0.5]	1.0 [0.5]	0.557
Constipation (1-7)	1.0 [1.0]	1.0 [1.0]	1.0 [0.6]	1.0 [0.6]	0.261
Total GI symptoms (1-7)	1.3 [0.8]	1.3 [0.8]	1.3 [0.6]	1.3 [0.6]	0.688

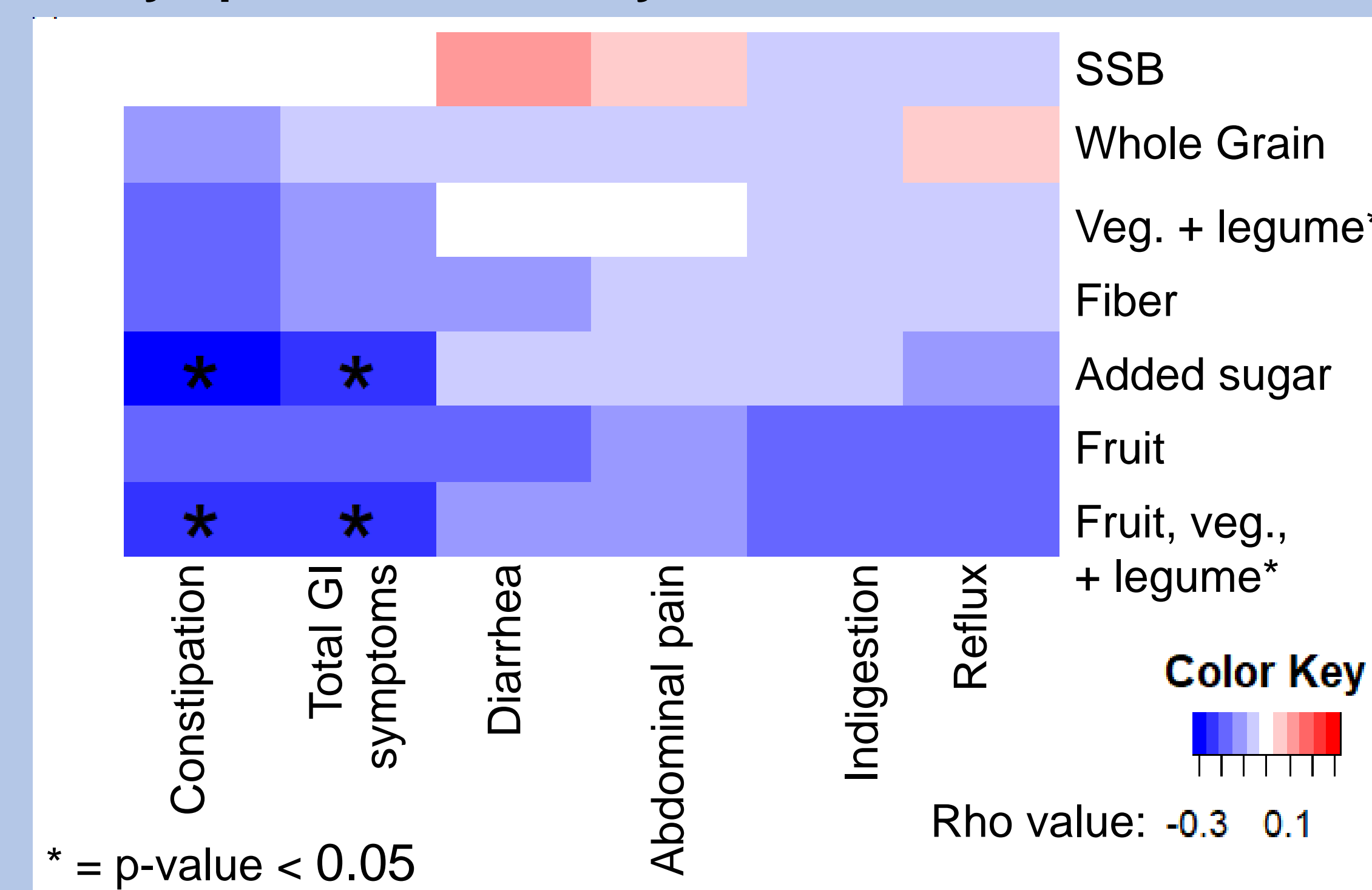
Analysis via Wilcoxon rank sum.
Survey scores were made in accordance with GSRS developers.
*Total GI symptoms = Average of all GSRS items

Table 3. Dietary intake by PAL category

	Rec. Amount	< 600 MET min/week		≥ 600 MET min/week		P- value
		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
Whole Grain (oz/day)	3-5	0.6 ± 0.3	0.6 ± 0.3	0.6 ± 0.3	0.943	
Fruit, vegetable, legume* (cups/day)	2.5	2.3 ± 0.5	2.5 ± 0.5	2.5 ± 0.5	0.006	
Vegetable, legume* (cups/day)	2.5	1.4 ± 0.3	1.6 ± 0.3	1.6 ± 0.3	0.001	
Fruit (cups/day)	2	0.9 ± 0.3	0.9 ± 0.3	0.9 ± 0.3	0.282	
Fiber (g/day)	25-50	15.2 ± 2.5	16.1 ± 2.7	16.1 ± 2.7	0.048	
Added sugar (tsp/day)	≤ 12	14.1 ± 4.7	14.2 ± 3.3	14.2 ± 3.3	0.963	
SSB (tsp/day)	≤ 12	6.1 ± 2.7	7.0 ± 3.5	7.0 ± 3.5	0.132	

Analysis via two-sample t-test
*French fries not included.
SSB = Sugar sweetened beverages.

Figure 2. Heatmap of Spearman correlations between GI symptoms and dietary intake.



Analysis via Spearman correlations with Benjamini Hochburg adjustment
*French fries not included
SSB = Sugar sweetened beverages

KEY FINDINGS

- ❖ Weight status, disease, and risk factors of disease were not associated with PAL.
- ❖ Higher intake of fiber rich foods (fruits, vegetables, legumes) was significantly associated with meeting PAL guidelines.
- ❖ GI symptoms were not associated with meeting the PAL guidelines.
- ❖ Constipation and total GI symptoms score were inversely and significantly correlated with added sugar and intake of fruits, vegetables, and legumes.

CONCLUSIONS

This study provides greater understanding of how PAL and diet intake is related to abdominal symptoms, a major indicator of health, in an underrepresented population.

FUTURE DIRECTIONS

- ❖ Continue research on the relation between PAL, diet, and GI symptoms using study designs that capture PAL data more accurately.
- ❖ Perform lifestyle interventions to assess changes in PAL, diet, and GI symptoms. In addition, study effect of immigration and acculturation on these outcomes.
- ❖ Study the effects of dietary intervention on alleviating GI symptoms and increasing QoL.

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