IECN 2024 Conference

The 4th International Electronic Conference on Nutrients

16–18 October 2024 | Online

MDPI

YOUNG MALE AND HIGHLY PHYSICALLY ACTIVE UNIVERSITY STUDENTS HAVE HIGHER ANIMAL-SOURCED PROTEIN INTAKE AND GREENHOUSE GAS EMISSIONS

Gordana Kenđel Jovanović[1,2], Greta Krešić[3], Elena Dujmić[3], Sandra Pavičić Žeželj[2]

1 Department of Health Ecology, Teaching Institute of Public Health of Primorsko-Goranska County, Rijeka, Croatia; gordana.kendel-jovanovic@zzjzpgz.hr

2 Department of Health Ecology, Faculty of Medicine, University of Rijeka, Rijeka, Croatia

3 Department of Food and Nutrition, Faculty of Tourism and Hospitality Management, University of Rijeka, Opatija, Croatia

INTRODUCTION & AIM

One of the proposed strategies for supporting food system sustainability is replacing animal-sourced protein with plant-sourced proteins since it may result in a significant reduction in land use and greenhouse gas emissions. This study aimed to assess the difference in characteristics of university students regarding their low or high intake of animal-sourced and plant-sourced protein.

METHOD

Students of the University of Rijeka, Croatia aged 19 to 27 years (N=224, 46% females, 53% junior) noted sociodemographic data and dietary intake. Anthropometric and body composition parameters were measured. The diet sustainability was assessed through the Planetary Heath Diet Index (PHDI). Greenhouse gas emissions (GHGE) data were obtained from the literature with the SU-EAT method. Students were divided into two groups; high animal-sourced/low plant-sourced protein intake (HAP/LPP) (N=36, 16%) and low animal-sourced/high plant-sourced protein intake (LAP/HPP) (N=34, 15%), based on intake quartiles. The chi-square test was used for testing the difference between groups differences, while logistic regression to assess the odds for high animal-sourced protein intake.

HAP/LPP; High animal-sourced/low plant-sourced protein intake

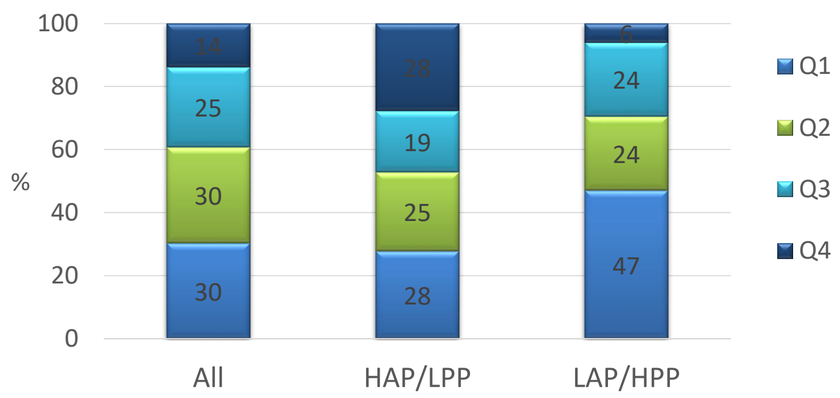

Figure 1. Distribution of university students (N=224) across quartiles of the Planetary Health Diet Index and according to the intake of animal- and plant-sourced protein

Table 2. Effects of sex, university degree, nutritional status, physical activity on the odds ratio of regarding animal-sourced protein intake among students of University of Rijeka, Croatia

		OR (95% CI)	P-VALUE
SEX	FEMALE	1	
	MALE	16.40 (11.86-21.26)	<0.001
UNIVERSITY DEGREE	JUNIOR	1	
	SENIOR	0.45 (0.43-2.85)	0.093
NUTRITIONAL STATUS	NORMAL WEIGHT	1	
	OVERWEIGHT/ OBESITY	1.17 (0.60-4.11)	0.456
PHYSICAL ACTIVITY LEVEL	MODERATE	1	
	HIGH	3.46 (1.87-9.26)	0.005
GREENHOUSE GAS EMISSIONS	PLANT-SOURCED PROTEIN	1	
	ANIMAL-SOURCED PROTEIN	4.83 (1.66-8.43)	0.002

RESULTS & DISCUSSION

The LAP/HPP intake group consisted of significantly more females (59% vs 25%; p=0.004), and moderately physically active students (54% vs 31%; p=0.004), and had higher PDHI scores (62.21 vs 51.53; p<0.001) and lower GHGE (1.82 vs 2.57 kg CO2/1000 kcal; p<0.001), compared to the HAP/LPP group. The age (p=0.216), university degree (p=0.836), BMI (p=0.069), nutritional (p=0.345) and smoking status (p=0.885) didn't differ significantly between groups. Significant higher odds for higher animal-sourced protein intake were male sex (OR=16.40, p<0.001) and high physical activity (OR=3.46, p=0.005). Students with higher animal-sourced protein intake had five times higher chances of higher GHGE than those with higher plant-sourced protein intake (OR=4.83, p=0.002).

Table 1. Characteristics of students of University of Rijeka, Croatia

	ALL (N=224)	HIGH ANIMAL-SOURCED/LOW PLANT-SOURCED PROTEIN INTAKE (N=36; 16%) HAP/LPP	LOW ANIMAL-SOURCED/HIGH PLANT-SOURCED PROTEIN INTAKE (N=34; 15%) LAP/HPP	P-VALUE
FEMALE	103 (46%)	9 (25%)	20 (59%)	0.004
JUNIOR	119 (53%)	15 (42%)	15 (44%)	0.836
UNDERWEIGHT	6 (3%)	0 (0%)	1 (3%)	0.345
NORMAL WEIGHT	139 (62%)	19 (53%)	21 (62%)	
OVERWEIGHT	64 (28%)	13 (36%)	11 (32%)	
OBESITY	15 (7%)	4 (11%)	1 (3%)	
LOW PHYSICAL ACTIVITY	30 (13%)	3 (8%)	2 (6%)	0.004
MODERATE PHYSICAL ACTIVITY	95 (43%)	11 (31%)	18 (54%)	
HIGH PHYSICAL ACTIVITY	99 (44%)	22 (61%)	14 (41%)	
NON-SMOKER	168 (75%)	26 (72%)	27 (79%)	0.885
kg CO_2/1000kcal	2.22 ± 0.53	2.57 ± 0.70	1.82 ± 0.39	<0.001
PLANETARY HEATH DIET INDEX	55.54 ± 13.30	51.53 ± 11.70	62.21 ± 14.98	<0.001

CONCLUSION

A healthy and sustainable diet education specifically targeting male and physically active students by strengthening their knowledge and skills in choosing and preparing food with plant-sourced proteins.

REFERENCES

1. Neta RSO, Lima SCVC, Nascimento LLD, et al. Indices for measurement of sustainable diets: A scoping review. PLoS One. 2023;18(12):e0296026.
2. Cacau LT, De Carli E, de Carvalho AM, et al. Development and Validation of an Index Based on EAT-Lancet Recommendations: The Planetary Health Diet Index. Nutrients. 2021;13(5):1698.
3. Telleria-Aramburu N, Bermúdez-Marín N, Rocandio AM, et al. Nutritional quality and carbon footprint of university students' diets: results from the EHU12/24 study. Public Health Nutr. 2022;25(1):183-195.