

# Food Insecurity as a Predictive Measure for Negative Health Outcomes in College Students

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## Introduction

**Food insecurity (FI)** is defined as not having access to sufficient nutritious foods or having uncertain access to said food.<sup>1</sup> Experiencing **FI** raises individuals' risk for hypertension, diabetes mellitus, hyperlipidemia, and other **cardiovascular disease risk** factors.<sup>2</sup>

On average, students with **FI** experience significantly greater perceived stress and lower grade point averages.<sup>1</sup>

College is an integral time for solidifying long-term behavioral habits and mediating disease risk.<sup>3</sup> It is important to identify the prevalence and implications of **FI** in the college student population to prevent **detrimental health effects** from manifesting later in life.

## Study Objective

*To highlight the correlation between food insecurity and four adverse health factors in college students, including cardiovascular disease risk, perceived stress, overall life satisfaction, and diet quality.*

## Subject Characteristics at Four Levels of Food Security (FS)

FS Level	High	Marginal	Low	Very Low	%
N	771	130	116	34	100%
<b>Gender</b>					
Male	253	44	47	15	34.2%
Female	518	86	69	19	65.8%
<b>Age (years)</b>					
18-19	626	107	81	18	79.2%
20+	145	23	35	16	20.9%
<b>BMI</b>					
Underweight	32	5	3	0	3.8%
Normal Weight	544	87	80	20	69.6%
Overweight	150	29	23	9	20.1%
Obese	44	9	10	5	6.5%

## Methods

### Study Design:

- Data were collected between 2018-2023 from the College Health and Nutrition Assessment Survey (UNH IRB#5524); an ongoing, cross-sectional study conducted at a midsized, northeastern university.

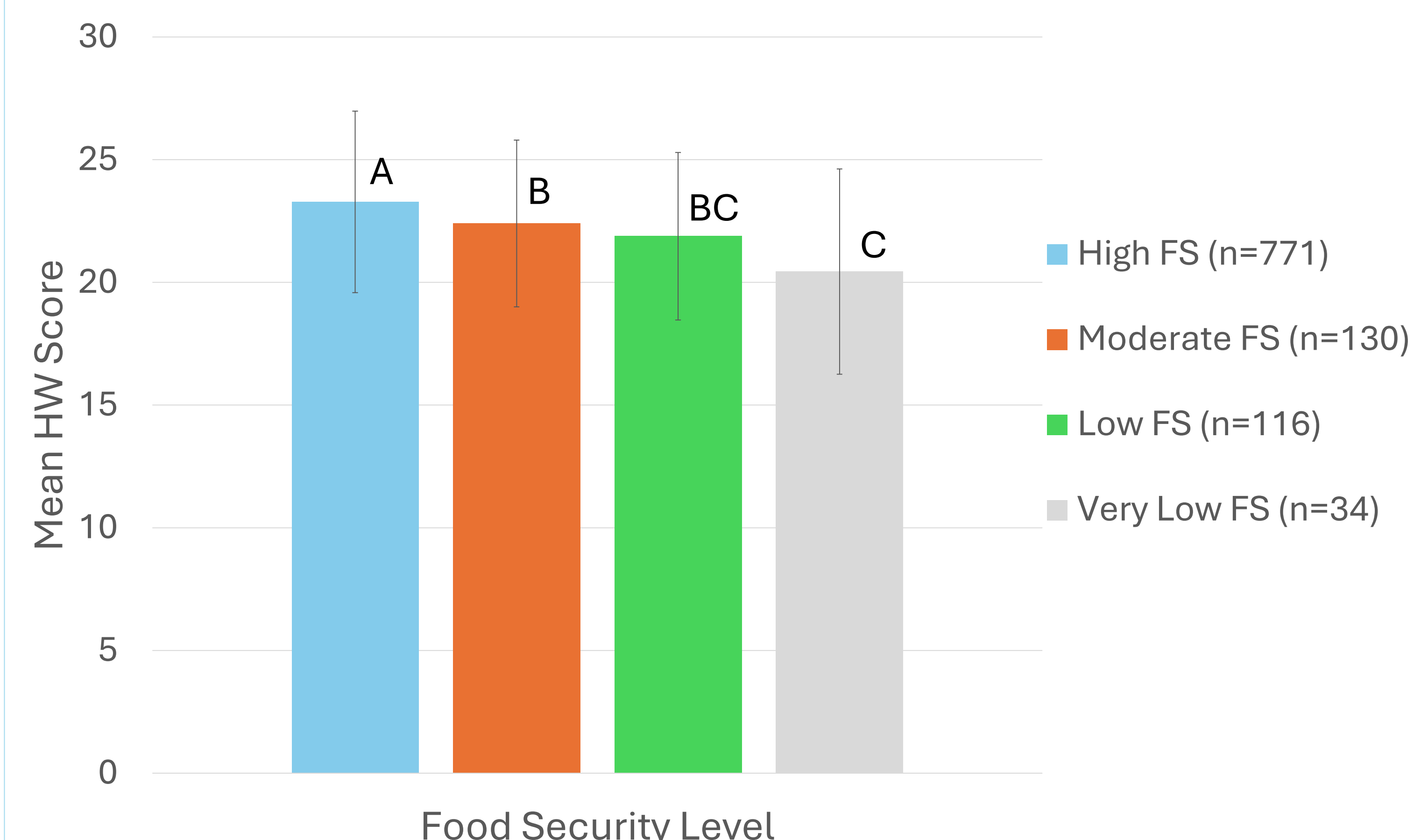
### Measurements

- FI status, perceived stress, and satisfaction with life were self-reported via an online questionnaire (Qualtrics).
- Anthropometric, biochemical, and clinical measures were collected after overnight fast to characterize metabolic syndrome (MetS) criteria.
- Diet quality was evaluated by a modified Healthy Eating Index (mHEI) (1-100) calculated from 3-day food records and analyzed via online nutrient analysis (Diet & Wellness+).

### Data Analysis:

- FI was categorized into four levels based on USDA guidelines (high, marginal, low, and very low food security).<sup>4</sup>
- Health factors captured in the Health and Wellness Score included Perceived Stress Score (0-40), Satisfaction with Life (1-4), Diet Quality via mHEI, Waist Circumference (Iliac), Blood Pressure (Systolic), fasting Blood Glucose, Triglycerides, and HDL.
- Values for health factors were scored (1-4) by organizing data into quartiles, where a higher quartile value indicated better health status, then summed to receive a total Health and Wellness Score (HWS, 0-32).
- ANOVA was used to evaluate differences in mean HWS between 4 groups of FI; Tukey's HSD evaluated inter-group differences in HWS (SPSS v29).
- Data are presented as means  $\pm$  SD.

## Health and Wellness Score by Level of Food Security



Bars with same letter are not statistically different ( $p > 0.05$ )

## Results

- After excluding missing data, **14.2%** (n=150) of the final sample (n=1,051) reported **Food Insecurity**.
- Those with High Food Security have **greater HWS** than FI groups (23.28 $\pm$ 3.70 vs. 22.40 $\pm$ 3.40, 21.88 $\pm$ 3.41, 20.44 $\pm$ 4.18, respectively,  $p < 0.05$ ).
- Similarly, those with Marginal Food Security had greater HWS than those with Very Low Food Security (22.40 $\pm$ 3.40 vs. 20.44 $\pm$ 4.18,  $p < 0.05$ ).

## Conclusions/Impact

- Overall health status as defined in the Health and Wellness Score metric was shown to decrease as students become less food secure.
- Data suggests the impact of food insecurity on college students' overall well-being is multi-factorial and supports the need for broad screening of FI-status on college campuses.
- Acknowledging that the negative implications of food insecurity afflict students at the mental, physical, and behavioral level warrant the need for more comprehensive interventions in the college student population.

## References

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