



# Dietary Sodium Intake Is Predicted By Anti-hypertensive Medication Regimen

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## INTRODUCTION

- ❖ Adherence to low-sodium diet is a cornerstone of self-care for patients with heart failure.
- ❖ Angiotensin converting enzyme inhibitors (ACEi), commonly prescribed to patients with heart failure, have been shown to decrease salt taste perception.
- ❖ Patients with heart failure may increase sodium intake in response to reduced perception.
- ❖ We hypothesized that heart failure patients who are prescribed ACEi would have significantly higher sodium intake, indicated by dietary sodium density, than those not prescribed ACEi.

## PURPOSE

To examine whether having a prescribed ACEi was associated with increased dietary sodium density in patients with heart failure.

## METHODS

- ❖ **DESIGN:**
  - Secondary data analysis.
  - Baseline data from BMI, Nutrition, Inflammation, and Heart Failure Outcomes
    - The purpose was to examine effects of nutritional intake, inflammatory markers, body weight, and body weight distribution on event-free survival of patients with heart failure.
- ❖ **SAMPLE:**
  - Adult patients with heart failure
  - N = 255
- ❖ **MEASURES:**

Variables	Instruments
Age, gender, race/ethnicity	Sociodemographic questionnaire
Smoking status	Smoking history questionnaire: <ul style="list-style-type: none"><li>• Smokers: current or recent smokers (quit &lt;12 months)</li><li>• Non-smokers: past (quit &gt;12 months) or never smokers</li></ul>
New York Heart Association (NYHA) class	<ul style="list-style-type: none"><li>• Identified through chart review.</li></ul>
Prescribed medications	<ul style="list-style-type: none"><li>• Identified through chart review.</li></ul>
Nutritional information	4-day food diaries: <ul style="list-style-type: none"><li>• Analyzed with NDSR software (NRCC, Minneapolis, MN)</li></ul>
Sodium density	Calculated from averaged 4 day totals: <ul style="list-style-type: none"><li>• Sodium (Na) / kilocalories (kcal)</li></ul>

## ANALYSES

- ❖ Patients were categorized into 2 groups: those prescribed ACEi and those not prescribed ACEi.
- ❖ Independent students t-tests and Chi Square analyses were used to compare sodium intake between participants who were vs. were not prescribed ACEi.
- ❖ Linear regression was conducted to determine whether prescribed ACEi independently predicted diet sodium density, controlling for age, gender, ethnicity, smoking status, NYHA class, and prescribed diuretics and beta blockers.

## RESULTS

Table 1. Participant Characteristics by prescribed ACEi

	Total sample N = 255	Not Prescribed ACEi N = 77	Prescribed ACEi N = 178	P value
Age (Years)	61.3 ± 11.8	61.2 ± 12.2	61.0 ± 11.7	.92
Gender (Male)	174 (68.2%)	42 (54.5%)	132 (74.2%)	<b>.009</b>
Ethnicity (non-Hispanic White)	185 (72.5%)	54 (70.1%)	131 (73.6%)	.43
Smoker (current or recent)	66 (25.9%)	23 (29.9%)	43 (24.2%)	.19
NYHA class (III/IV)	112 (43.9%)	32 (41.5%)	80 (44.9%)	.36
Prescribed diuretic (Yes)	190 (74.5%)	59 (76.6%)	131 (73.6%)	.40
Prescribed beta blocker (Yes)	226 (88.6%)	64 (83.1%)	162 (91.0%)	<b>.003</b>
Sodium density (Na/kcal)	1.76 ± 0.52	1.61 ± 0.43	1.82 ± 0.55	<b>.002</b>

Values are mean ± SD or n (%)

Table 2. Predictors of Sodium Density

	B	β	P value
Age in years	-.003	-.073	.28
Gender (females compared to males)	.003	.029	.65
Ethnicity (other racial/ethnic groups compared to non-Hispanic Whites)	-.082	-.070	.33
Smoker (current or recent smoker compared to past or never smoker)	.042	.036	.61
NYHA Class (III/IV compared to I/II)	.045	.043	.48
Prescribed diuretic (prescribed compared to not prescribed)	.109	.090	.14
Prescribed beta blocker (prescribed compared to not prescribed)	-.133	-.081	.34
ACEi (prescribed compared to not prescribed)	.248	.222	<b>.003</b>

## Results (cont.)

- ❖ Heart failure patients prescribed ACEi consumed an average of 13% more sodium per kcal than those not prescribed ACEi. (Table 1)
- ❖ ACEi prescription was the only significant predictor of sodium density after controlling for age, gender, ethnicity, smoking status, NYHA class, and prescribed diuretic and beta blocker in a multiple linear regression. (Table 2)
- ❖ The results support the hypothesis that patients prescribed an ACEi have higher sodium intake than patients not prescribed an ACEi.



## CONCLUSIONS

- ❖ Heart failure patients who are prescribed ACEi may benefit from more intensive interventions to improve adherence to dietary sodium restrictions.
- ❖ Assessing medication regimen can provide critical information that can support more effective interventions to enhance heart failure patients' adherence to dietary sodium restriction.
- ❖ Research is needed to explore heart failure patients' salt taste perception to better understand associations between medication regimen and sodium intake.

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