ABSTRACT · OBESITYWEEK 2025

Who Reports More Food Noise? Demographic and Health Associations via a Validated Measure

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ABSTRACT

Background

Food noise is a widely discussed phenomenon that remains poorly understood. The Ro Allison Indiana Dhurandhar Food Noise Inventory (RAID-FNI) was developed and validated to formally define and measure this construct. This measure can be used to explore how food noise experiences vary across demographic and health characteristics in a treatment-seeking population with overweight or obesity. Patients may experience different psychological drivers and symptom profiles; understanding these patterns can support better screening and intervention strategies.

Methods

We analyzed electronic health record (EHR) data from a random sample of 35,000 patients who completed the RAID-FNI scale during treatment initiation for overweight or obesity on Ro's telehealth platform between May 1, 2025 and May 29, 2025. Multivariable linear regression was used to test the relationship between mean RAID-FNI score and patient characteristics. To build the model, covariates were added sequentially, beginning with age, sex, and then BMI. This preliminary analysis was conducted with a training set and no pre-specification of analyses. Given the steady influx of new patients on Ro's platform, a comparable test sample can be readily obtained. If advanced to a full manuscript, the model will be pre-specified and evaluated on new, independent data.

Results

Patients had a median age of 39 years, median BMI of 34 kg/m², and were 74% female. In the final model, increasing age was associated with a moderate decrease in mean RAID-FNI score (β=–0.0235; 95% CI, –0.0245 to –0.0226; *P*<.001). Females had modestly higher mean RAID-FNI scores on average (β=0.1343; 95% CI, 0.1094 to 0.1591; *P*<.001). An interaction term between age and sex was tested but it was not statistically significant and was therefore excluded from the model. Participants who rated their previous week's diet as less healthy had higher levels of food noise (β range, 0.0275 to 0.6659; F=168.1; *P*<.001). BMI had a quadratic relationship with RAID-FNI scores, such that food noise decreased with increasing BMI until a BMI of 48, after which food noise increased modestly with BMI (BMI β=–0.0307; 95% CI, –0.0410 to –0.0204; *P*<.001, BMI² β=0.0003; 95% CI, 0.0002 to 0.0004; *P*<.001). All racial and ethnic minority groups, except Asian/Pacific Islander, had significantly lower mean RAID-FNI scores than White patients (β range, –0.5569 to –0.1833; F=249.8; *P*<.001). Finally, having a history of a mental health condition was associated with a modest increase in RAID-FNI score (β=0.1083; 95% CI, 0.0852 to 0.1315; *P*<.001). The final model accounted for 11.3% of the variance in RAID-FNI score.

Conclusions

Results suggest food noise can vary based on demographic and health factors in a treatment-seeking population with overweight or obesity. Food noise is an emerging component of metabolic disease treatment. A better understanding of patients who experience food noise may lead to improved care, more successful treatment, and enhanced quality of life.

Table 1. Results of multivariable linear regression examining relationship between mean RAID-FNI score and demographic and health characteristics in patients with overweight or obesity

Characteristic	β (unstandardized)	95% CI	*P* Value
Age	-0.0235	-0.0245, -0.0226	<.001
Sex (ref=Male)	0.1343	0.1094, 0.1591	<.001
Self-rated diet quality over last week			
Very Healthy	—	—	
Somewhat Healthy	0.0275	-0.0112, 0.0661	.163
Neither Healthy Nor Unhealthy	0.0768	0.0351, 0.1185	<.001
Somewhat Unhealthy	0.4006	0.3524, 0.4487	<.001
Very Unhealthy	0.6659	0.5817, 0.7501	<.001
BMI	-0.0307	-0.0410, -0.0204	<.001
BMI²	0.0003	0.0002, 0.0004	<.001
Race/Ethnicity			
White	—	—	
Asian or Pacific Islander	-0.0286	-0.0863, 0.0290	.330
Black or African American	-0.5569	-0.5906, -0.5231	<.001
Hispanic or Latino	-0.3242	-0.3559, -0.2925	<.001
Multiracial/Other	-0.1938	-0.2378, -0.1499	<.001
Native American or American Indian	-0.1833	-0.3390, -0.0275	.021
History of mental health condition	0.1083	0.0852, 0.1315	<.001

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Background

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The Ro Allison Indiana Dhurandhar Food Noise (RAID-FN) Inventory was developed and validated to formally define and measure this construct.[1]

This measure was used to explore how food noise experiences vary across demographic and health characteristics in a treatment-seeking population with overweight or obesity. Patients may experience different psychological drivers and symptom profiles and understanding these patterns can support better screening and intervention strategies.

Methods

We analyzed electronic health record (EHR) data from a random sample of 35,000 patients who completed the RAID-FN scale during treatment initiation for overweight or obesity on a telehealth platform between May 1, 2025 and May 29, 2025.

Multivariable linear regression was used to test the relationship between mean RAID-FN score and patient characteristics.

To build the model, covariates were added sequentially, beginning with age, sex, and then BMI. This preliminary analysis was conducted with a training set and no pre-specification of analyses. Given the steady influx of new patients to the platform, a comparable test sample can be readily obtained.

When advanced to a full manuscript, the model will be pre-specified and evaluated on new, independent data.

Authors
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Affiliation
Authors Smith, Broffman, Chai, Patnaik, Stegman, and Manalac are current employees of Roman Health Ventures, the telehealth platform that supplied data for this study. Dhurandhar is the co-founder of Obthera and Director of Research Special Projects at Texas Tech University. Allison is a Professor of Pediatrics, Endowed Chair, Director, USDA Children's Nutrition Research Center at Baylor College of Medicine, and a paid advisor to Roman Health Ventures (Ro) and, in this endeavor, is acting as an independent consultant to Ro and not representing his respective university.

Reference
1. Dhurandhar, E.J., Maki, K.C., Dhurandhar, N.V. et al. Food noise: definition, measurement, and future research directions. Nutr. Diabetes 15, 30 (2025). https://doi.org/10.1038/s41387-025-00382-x

Key Finding: Food noise varies based on demographic and health factors in a treatment-seeking population with overweight or obesity.

- We observed differences at baseline in sex, BMI, race/ethnicity, history of a mental health condition, and self-rated diet over the previous week with mean RAID-FN score.
- The largest effect sizes were observed with less healthy diet patterns over the previous week and some races/ethnicities.
- Food noise is an emerging component of metabolic disease treatment. A better understanding of patients who experience food noise may lead to improved care, more successful treatment, and enhanced quality of life.

Results

Patients had a median age of 39 years, median BMI of 34 kg/m², and were 74% female. Mean baseline RAID-FN score was 2.86.

In the final model, increasing age was associated with a moderate decrease in mean RAID-FN score. Females had modestly higher mean RAID-FN scores on average. BMI had a quadratic relationship with RAID-FN scores, such that food noise decreased with increasing BMI until a BMI of 48, after which food noise increased modestly with BMI. All racial and ethnic minority groups, except Asian/Pacific Islander, had significantly lower mean RAID-FN scores than White patients.

Participants who rated their previous week's diet as less healthy had higher levels of food noise. Having a history of a mental health condition was associated with a modest increase in RAID-FN score. The final model accounted for 11.3% of the variance in RAID-FN score.

Figure 1. Mean RAID-FN score distribution (overlaid by sex)

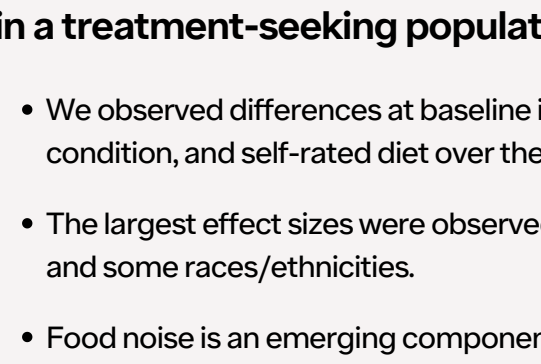


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