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Examining the Relationship Between Polycystic Ovary Syndrome (PCOS) and Food Noise Using a Validated Scale

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ABSTRACT

Background

Food noise, defined as persistent and intrusive thoughts related to food, has gained increased attention in the context of pharmacologic treatments for obesity. The recent development and validation of the Ro Allison Indiana Dhurandhar (RAID) Food Noise Inventory allows for measurement of this phenomenon. Polycystic ovary syndrome (PCOS) is characterized by hormonal dysregulation and metabolic disturbances associated with weight gain and altered eating behaviors; however, whether individuals with PCOS experience higher levels of food noise has not been studied. The objective of this analysis is to examine the association between PCOS and food noise among women of reproductive age with overweight or obesity.

Methods

We examined EHR data from a random sample of 75,000 female patients aged 18-44 who sought treatment for overweight or obesity on a telehealth platform between 5/1/2025 and 8/31/2025. Patients who indicated they may be experiencing menopause-related weight gain were excluded. We ran a linear regression model predicting baseline RAID score using PCOS as our primary predictor in addition to common demographic and health factors shown to be associated with food noise. We also included a covariate identifying current oral birth control use.

Results

The sample had a median age of 33 (IQR: 28-38), median BMI of 34.5 (IQR: 30.9-39.9), and was ethnically diverse with 53% White, 17% Black or African American, and 17% Hispanic or Latino. The study population was located throughout the U.S. with the largest group located in the South (44%). PCOS prevalence was 13.7% (n=10,302). On average, patients with PCOS were younger (median age: 31 vs 33 years), had higher baseline BMI (36 vs 34 kg/m^2), and greater prevalence of anxiety (42% vs 32%) and prediabetes/diabetes (39% vs 13%). Age, race, U.S. region, BMI, history of anxiety, self-rated diet quality, amount of sleep, weight-related quality of life, weight stigma, oral birth control, and prediabetes/diabetes were significantly associated with baseline food noise levels (p <.001). After controlling for demographic and health factors, PCOS was not significantly associated with food noise. A sensitivity analysis revealed that removing BMI and/or prediabetes/diabetes from the full model did not materially impact the relationship between PCOS and food noise whereas removing age from the full model resulted in PCOS becoming significant, suggesting that age may act as a confounder. Limitations include the delineation of PCOS as a binary state, which does not account for its phenotypic variability or degree of severity.

Conclusions

After controlling for demographic, health, hormonal, and metabolic factors, PCOS was not significantly associated with food noise. Given the multifaceted nature of PCOS, more research is needed to explore the relationship between PCOS and food noise.

POSTER

Examining the Relationship Between Polyendocrine Metabolic Ovarian Syndrome and Food Noise using the RAID-FN Scale

Background

Food noise, defined as persistent and intrusive thoughts related to food, has gained increased attention in the context of pharmacologic treatments for obesity. The recent development and validation of the Ro Allison Indiana Dhurandhar (RAID-FN) Food Noise Inventory allows for measurement of this phenomenon.[1]

Polyendocrine Metabolic Ovarian Syndrome (PMOS) is characterized by hormonal dysregulation and metabolic disturbances associated with weight gain and altered eating behaviors;[2, 3] however, whether individuals with PMOS experience higher levels of food noise has not been studied. The objective of this analysis was to examine the association between PMOS and food noise among women of reproductive age with overweight or obesity.

Methods

We examined EHR data from a random sample of 75,000 female patients aged 18–44 years who sought treatment for overweight or obesity on a telehealth platform between May 1, 2025, and August 31, 2025. The analysis included patients who reported a history of PMOS using the terminology displayed to patients at the time of intake, “polycystic ovary syndrome (PCOS).” Patients who indicated they may be experiencing menopause-related weight gain were excluded.

We fit a linear regression model predicting RAID-FN score reported at intake, with PMOS history as the primary predictor. The model adjusted for demographic and clinical factors previously associated with food noise, and included an additional covariate for current oral contraceptive use.

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References

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Key Findings

- After adjustment for demographic, hormonal, and metabolic covariates, PMOS diagnosis was not independently associated with food noise.
  - Given the multifaceted nature of PMOS, more research is needed to explore the relationship between PMOS and food noise.
- Food noise was significantly associated with demographic, metabolic, and psychosocial factors including anxiety, diet quality, sleep, weight-related quality of life, weight stigma, oral contraceptive use, and history of prediabetes/diabetes.

Results

In an unadjusted model, PMOS diagnosis was associated with higher baseline food noise. After adjustment for demographic, hormonal, behavioral, psychosocial, and metabolic covariates, PMOS diagnosis was no longer independently associated with baseline food noise (β = −0.01, P = .265).

In the final model, age, race/ethnicity, U.S. region, BMI, history of anxiety, self-rated diet quality, sleep duration, weight-related quality of life, weight stigma, oral birth control use, and prediabetes/diabetes were significantly associated with baseline food noise levels. History of depression was not independently associated with food noise. In sensitivity analyses, removing BMI and/or diabetes from the full model did not materially affect the relationship between PMOS and food noise.

Figure 1, right, shows the unadjusted PMOS estimate, the adjusted PMOS estimate, and covariate estimates from the final multivariable model. Points represent estimates and horizontal bars represent 95% CIs. Age is scaled per 10 years and BMI per 5 kg/m^2. Reference groups are no PMOS, White race/ethnicity, Northeast region, “Very Healthy” diet quality, and absent/no for binary covariates.

Figure 1. PMOS Diagnosis and Final-Model Associations With RAID-FN (Food Noise) Score

Unadjusted and adjusted PMOS estimates, with covariate estimates from the final multivariable linear regression model

